Service Manual

PIONEER®
The Art of Entertainment

KEH-P414/X1M/UC

ORDER NO.
CRT1998

MULTI-CD CONTROL HIGH POWER CASSETTE PLAYER WITH FM/AM TUNER

KEH-P414 X1M/UC
KEH-P4600 X1M/UC
KEH-P4650 X1M/ES

NOTE:

- **See the separate manual CX-631(CRT1640) for the cassette mechanism description.**
- **The cassette mechanism assy employed in this model is one of X-2L series**
- **Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.**
- **This service manual does not describe the CD test mode. For the operations in the CD test mode, refer to the CD player's Service Manual.**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS AND PARTS LIST 3
3. SCHEMATIC DIAGRAM 10
4. PCB CONNECTION DIAGRAM 20
5. ELECTRICAL PARTS LIST 30
6. ADJUSTMENT 37
7. GENERAL INFORMATION 39
   - 7.1 PARTS 39
     - 7.1.1 IC 39
     - 7.1.2 DISPLAY 44
   - 7.2 DIAGNOSIS 45
     - 7.2.1 DISASSEMBLY 45
   - 7.3 EXPLANATION 46
     - 7.3.1 CIRCUIT DESCRIPTIONS 46
     - 7.3.2 BLOCK DIAGRAM 48
8. OPERATIONS AND SPECIFICATIONS 50

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 501 Orchard Road, #10-00, Lane Crawford Place, Singapore 0923

© PIONEER ELECTRONIC CORPORATION 1997

K-FFM. FEB. 1997 Printed in Belgium

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely, you should mot risk trying to do so and refer the repair to a qualified service technician.

UC model

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

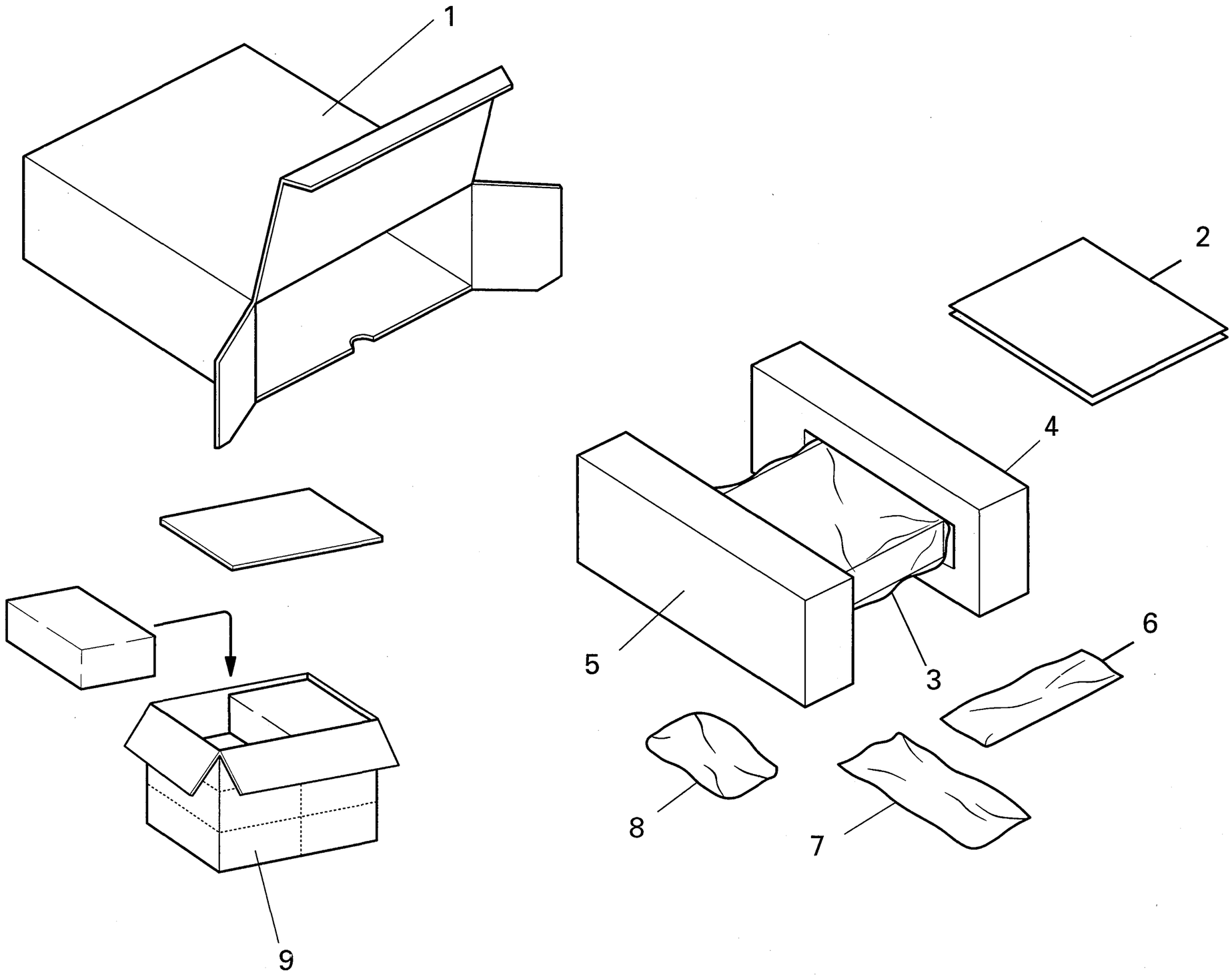


Fig. 1

NOTE:

- Parts marked by " * "are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ▼ mark on the product are used for disassembly.

- **Parts List**

Mark No.	Description	Part No. KEH-P414/X1M/UC	KEH-P4600/X1M/UC	KEH-P4650/X1M/ES
1	Carton	CHG3226	CHG3225	CHG3227
2-1	Owner's Manual	CRD2219	CRD2217	CRD2221
2-2	Installation Manual	CRD2220	CRD2218	CRD2222
2-3	Owner's Manual	Not used	Not used	CRD2232
* 2-4	Warranty Card	CRY1070	Not used	Not used
* 2-5	Card	Not used	ARY1048	Not used
3	Polyethylene Bag	CEG1173	CEG1173	CEG-162
4	Protector	CHP1622	CHP1622	CHP1622
5	Protector	CHP1623	CHP1623	CHP1623
6	Case Assy	CXB1063	CXB1063	CXB1063
7	Cord Assy	CDE4849	CDE4849	CDE4849
8	Accessory Assy	CEA2002	CEA2002	CEA2002
9	Contain Box	CHL3226	CHL3225	CHL3227

● Owner's Manual, Installation Manual

Model	Part No.	Language
KEH-P414/X1M/UC	CRD2219	English, French
	CRD2220	English, French
KEH-P4600/X1M/UC	CRD2217	English, French, Spanish
	CRD2218	English, French, Spanish
KEH-P4650/X1M/ES	CRD2221	English, Spanish
	CRD2232	Portuguese, Arabic
	CRD2222	English, Spanish, Portuguese, Arabic

● Accessory Assy

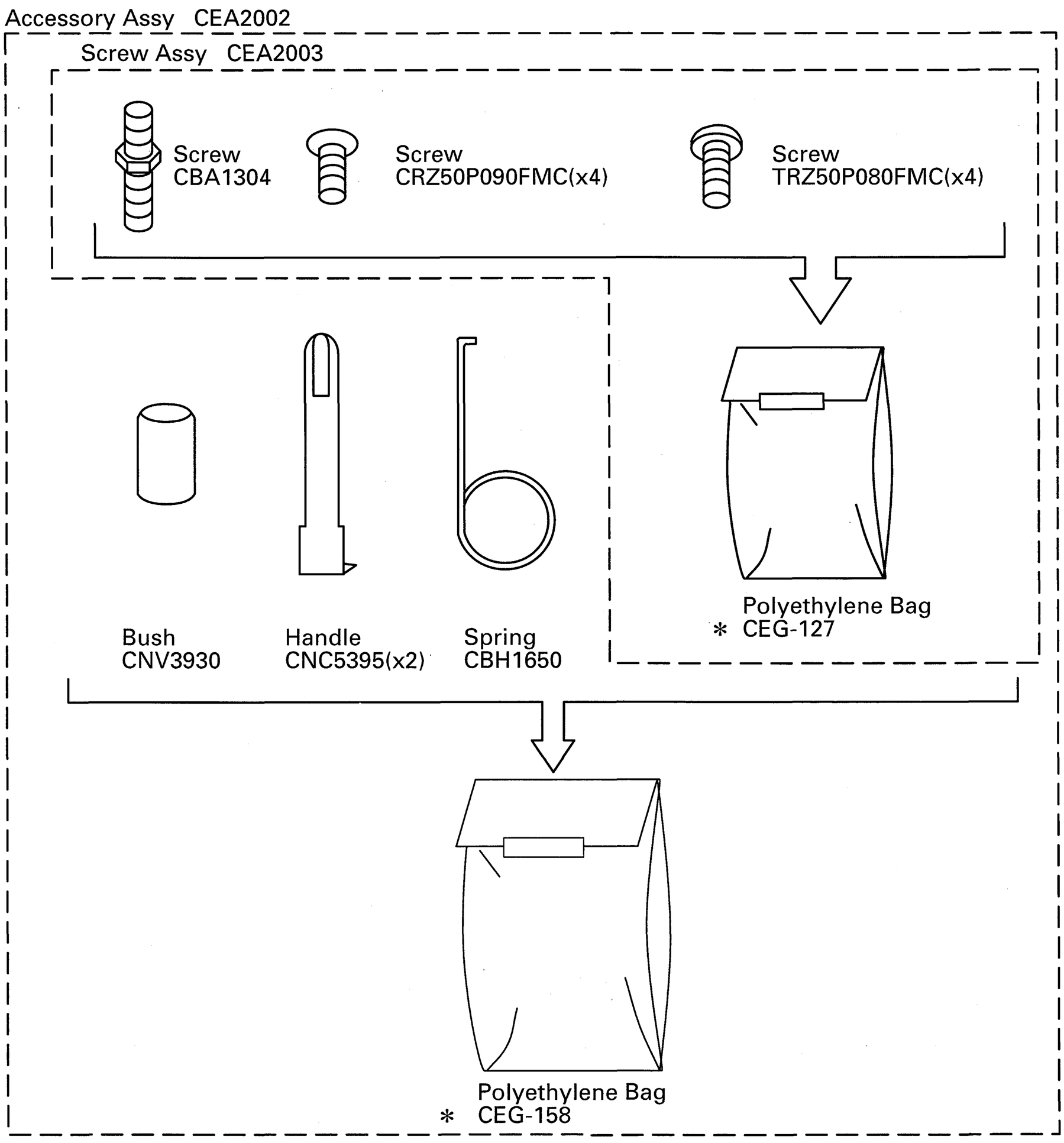


Fig. 2

2.2 EXTERIOR

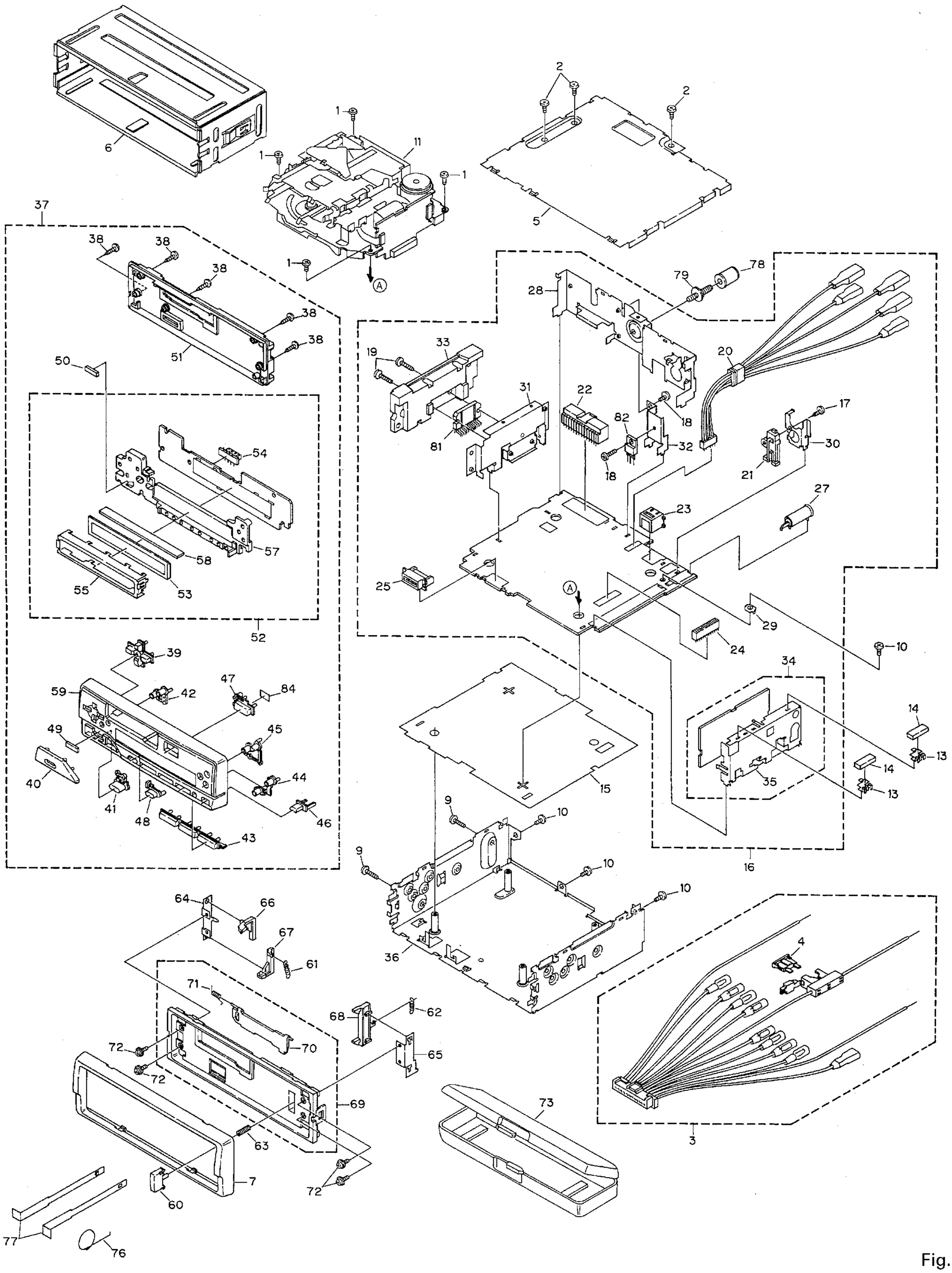


Fig. 3

● Parts List

Mark No.	Description	Part No. KEH-P414/X1M/UC	KEH-P4600/X1M/UC	KEH-P4650/X1M/ES
1	Screw	BSZ26P050FMC	BSZ26P050FMC	BSZ26P050FMC
2	Screw	BSZ30P060FMC	BSZ30P060FMC	BSZ30P060FMC
3	Cord Assy	CDE4849	CDE4849	CDE4849
4	Fuse(10A)	CEK1136	CEK1136	CEK1136
5	Case	CNB2074	CNB2074	CNB2074
6	Holder	CNC6798	CNC6798	CNC6798
7	Panel	CNS4200	CNS4200	CNS4200
8	•••••			
9	Screw	BMZ30P100FMC	BMZ30P100FMC	BMZ30P100FMC
10	Screw	BSZ30P055FUC	BSZ30P055FUC	BSZ30P055FUC
11	Cassette Mechanism Module	EXK3660	EXK3610	EXK3610
12	•••••			
13	Holder	CNC5704	CNC5704	CNC5704
14	Cushion	CNM4870	CNM4870	CNM4870
15	Insulator	CNM5045	CNM5045	CNM5045
16	Tuner Amp Unit	CWM5263	CWM5264	CWM5265
17	Screw	BPZ26P080FMC	BPZ26P080FMC	BPZ26P080FMC
18	Screw	BSZ26P080FMC	BSZ26P080FMC	BSZ26P080FMC
19	Screw	BSZ26P140FMC	BSZ26P140FMC	BSZ26P140FMC
20	Cord Assy(CN603)	CDE5180	Not used	Not used
21	Pin Jack(CN301)	CKB1028	CKB1028	CKB1028
22	Plug(CN951)	CKM1226	CKM1226	CKM1226
23	Connector(CN751)	CKS3408	CKS3408	CKS3408
24	Connector(CN602)	CKS3568	CKS3568	CKS3568
25	Connector(CN601)	CKS3581	CKS3581	CKS3581
26	•••••			
27	Antenna Jack(CN402)	CKX1056	CKX1056	CKX1056
28	Panel	CNB2112	CNB2113	CNB2113
29	Holder	CNC5399	CNC5399	CNC5399
30	Holder	CNC6531	CNC6531	CNC6531
31	Holder	CNC6674	CNC6674	CNC6674
32	Holder	CNC6845	CNC6845	CNC6845
33	Heat Sink	CNR1426	CNR1426	CNR1426
34	FM/AM Tuner Unit	CWE1417	CWE1417	CWE1485
35	Holder	CNC6555	CNC6555	CNC6555
36	Chassis Unit	CXA9858	CXA9858	CXA9858
37	Detach Grille Assy	CXB1053	CXB1054	CXB1055
38	Screw	BPZ20P120FZK	BPZ20P120FZK	BPZ20P120FZK
39	Button	CAC4859	CAC4859	CAC4859
40	Button(+,-)	CAC4860	CAC4860	CAC4860
41	Button(SOURCE)	CAC4861	CAC4861	CAC4861
42	Button(FUNC,AUDIO)	CAC4862	CAC4862	CAC4862
43	Button(1-6)	CAC4864	CAC4864	CAC4864
44	Button(PGM,DISPLAY)	CAC4865	CAC4865	CAC4865
45	Button(LOUD,CLOCK)	CAC4866	CAC4866	CAC4866

Mark No.	Description	Part No. KEH-P414/X1M/UC	KEH-P4600/X1M/UC	KEH-P4650/X1M/ES
46	Button(Detach)	CAC4870	CAC4870	CAC4870
47	Button(EJECT)	CAC4874	CAC4874	CAC4874
48	Button(◁▷)	CAC5130	CAC4863	CAC5130
49	Cushion	CNM5156	CNM5156	CNM5156
50	Cushion	CNM5271	CNM5271	CNM5271
51	Cover	CNS4194	CNS4194	CNS4194
52	Key Board Unit	CWM5272	CWM5272	CWM5272
53	LCD(LCD901)	CAW1410	CAW1410	CAW1410
54	Connector(CN901)	CKS3580	CKS3580	CKS3580
55	Holder	CNC6846	CNC6846	CNC6846
56	•••••			
57	Lighting Conductor	CNV4762	CNV4762	CNV4762
58	Connector	CNV4763	CNV4763	CNV4763
59	Grille Unit	CXB1026	CXB1027	CXB1028
60	Button	CAC4836	CAC4836	CAC4836
61	Spring	CBH1834	CBH1834	CBH1834
62	Spring	CBH1835	CBH1835	CBH1835
63	Spring	CBH1933	CBH1933	CBH1933
64	Bracket	CNC6135	CNC6135	CNC6135
65	Bracket	CNC6791	CNC6791	CNC6791
66	Arm	CNV4692	CNV4692	CNV4692
67	Arm	CNV4693	CNV4693	CNV4693
68	Arm	CNV4728	CNV4728	CNV4728
69	Panel Unit	CXB1035	CXB1035	CXB1035
70	Door	CAT1836	CAT1836	CAT1836
71	Spring	CBH1838	CBH1838	CBH1838
72	Screw	IMS20P030FZK	IMS20P030FZK	IMS20P030FZK
73	Case Assy	CXB1063	CXB1063	CXB1063
74-75	•••••			
76	Spring	CBH1650	CBH1650	CBH1650
77	Handle	CNC5395	CNC5395	CNC5395
78	Bush	CNV3930	CNV3930	CNV3930
79	Screw	CBA1304	CBA1304	CBA1304
80	•••••			
81	IC(IC301)	TDA7384A	TDA7384A	TDA7384A
82	Transistor(Q951)	2SD2396	2SD2396	2SD2396
83	•••••			
84	Spacer	CNM5356	CNM5356	CNM5356

2.3 CASSETTE MECHANISM MODULE

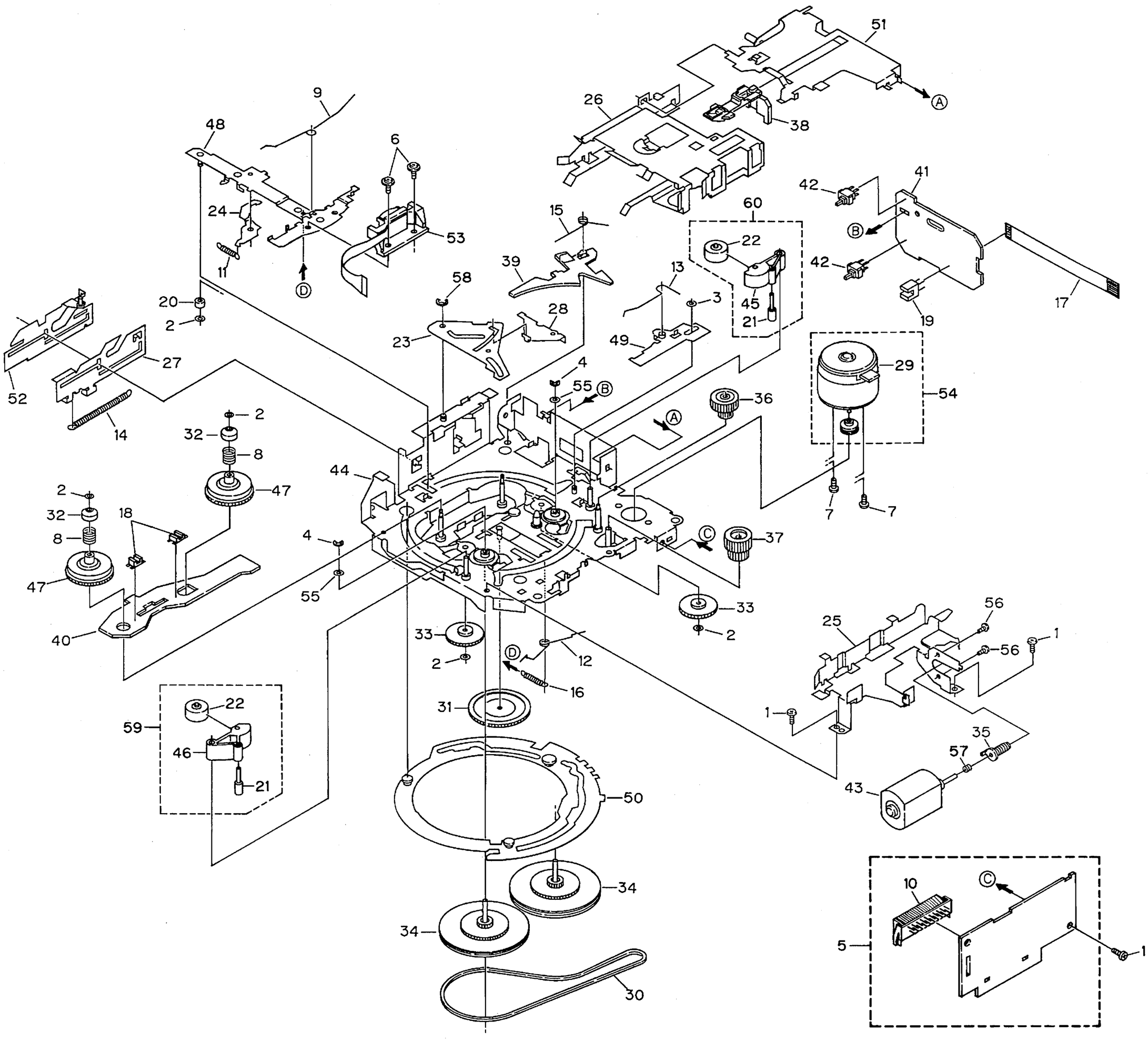


Fig. 4

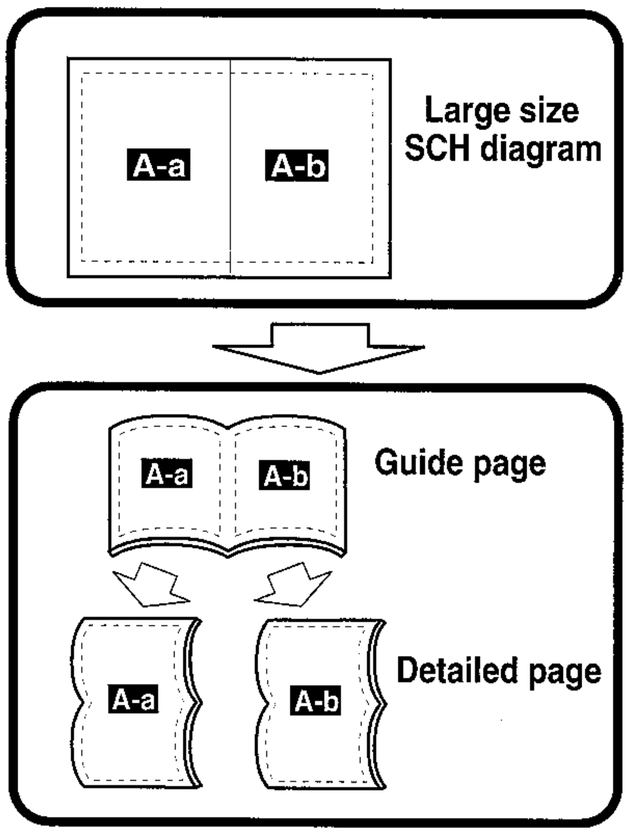
● Parts List

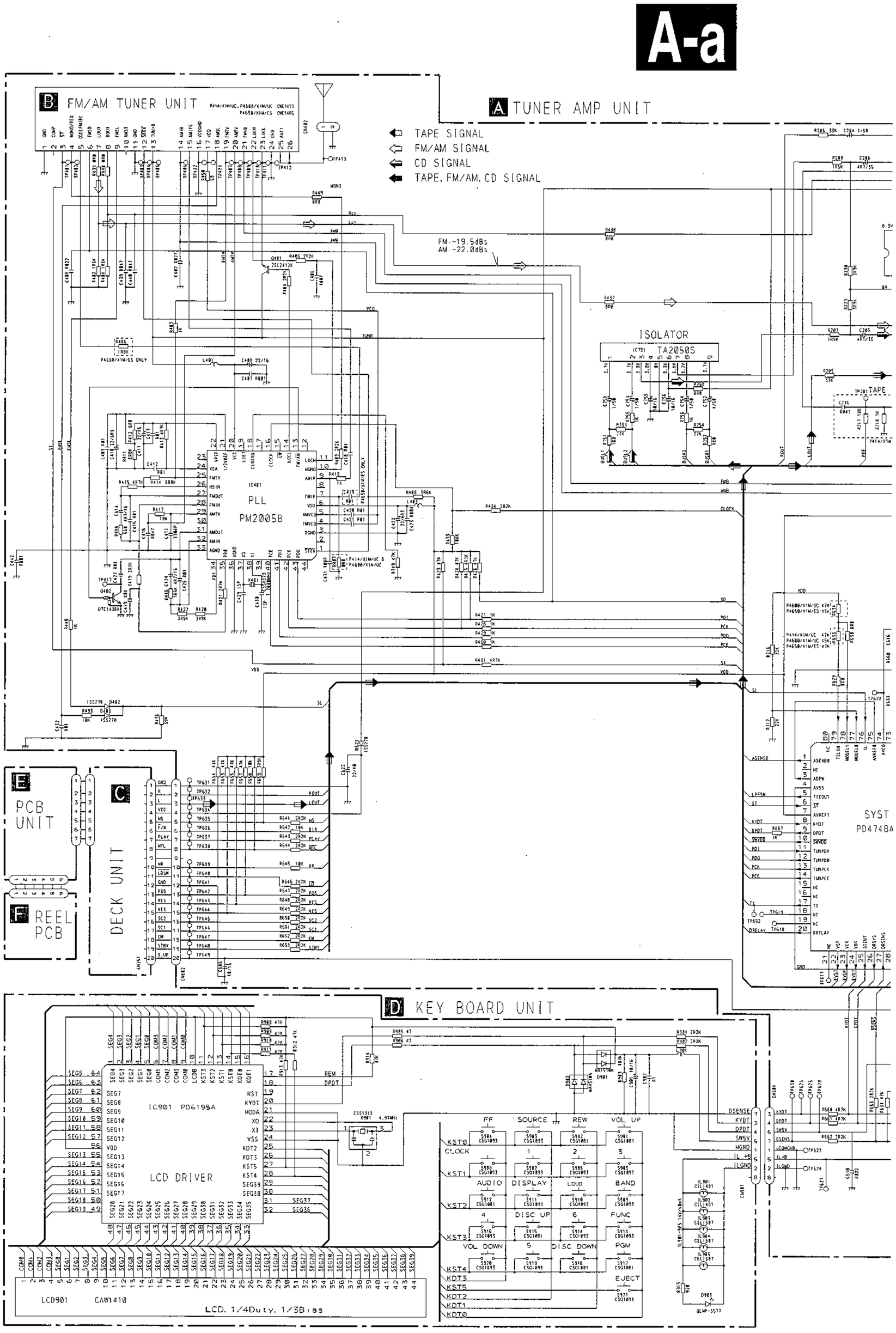
Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC
2	Washer	CBF1037
3	Washer	CBF1038
4	Washer	CBG1003
5	Deck Unit (P414/X1M/UC)	EWM1011
	Deck Unit (P4600/X1M/UC,P4650/X1M/ES)	EWM1010
6	Screw	EBA1028
7	Screw	EBA1037
8	Spring	EBH1531
9	Spring	EBH1575
10	Plug(CN251)	CKS3540
11	Spring	EBH1515
12	Spring	EBH1587
13	Spring	EBH1517
14	Spring	EBH1518
15	Spring	EBH1519
16	Spring	EBH1537
17	Cord	EDD1020
18	Photo-interrupter(EGN2,3)	EGN1006
19	Photo-interrupter(EGN1)	EGN1005
20	Roller	ENR1031
21	Shaft	ELA1373
22	Pinch Roller	ENV1501
23	Arm	ENC1396
24	Arm	ENC1397
25	Guide	ENC1481
26	Holder	ENC1417
27	Lever	ENC1448
28	Arm	ENC1401
29	Motor	EXM1028
30	Belt	ENT1027
31	Gear	ENV1347
32	Collar	ENV1508
33	Gear	ENV1350
34	Flywheel	ENV1516
35	Worm Gear	ENV1439
36	Worm Wheel	ENV1440
37	Gear	ENR1028
38	Lever	ENV1442
39	Arm	ENV1445
40	Gathering P.C.Board	ENX1037
41	Gathering P.C.Board	ENX1042
42	Switch(S1,S2)	ESG1004
43	Motor Unit(M2)	EXA1485
44	Chassis Unit	EXA1455
45	Pinch Holder	ENV1485
46	Pinch Holder	ENV1486
47	Reel Unit	EXA1456
48	Head Base Unit	EXA1457
49	Lever Unit	EXA1438
50	Gear Unit	EXA1436
51	Frame Unit	EXA1458
52	Lever Unit	EXA1439
53	Head Assy(HD1) (P414/X1M/UC)	EXA1508
	Head Assy(HD1) (P4600/X1M/UC,P4650/X1M/ES)	EXA1506
54	Motor Unit(M1)	EXA1491
55	Washer	HBF-179
56	Screw	BMZ20P022FMC
57	Spring	EBH1545
58	Washer	YE20FUC
59	Pinch Holder Unit	EXA1501
60	Pinch Holder Unit	EXA1500

3. SCHEMATIC DIAGRAM

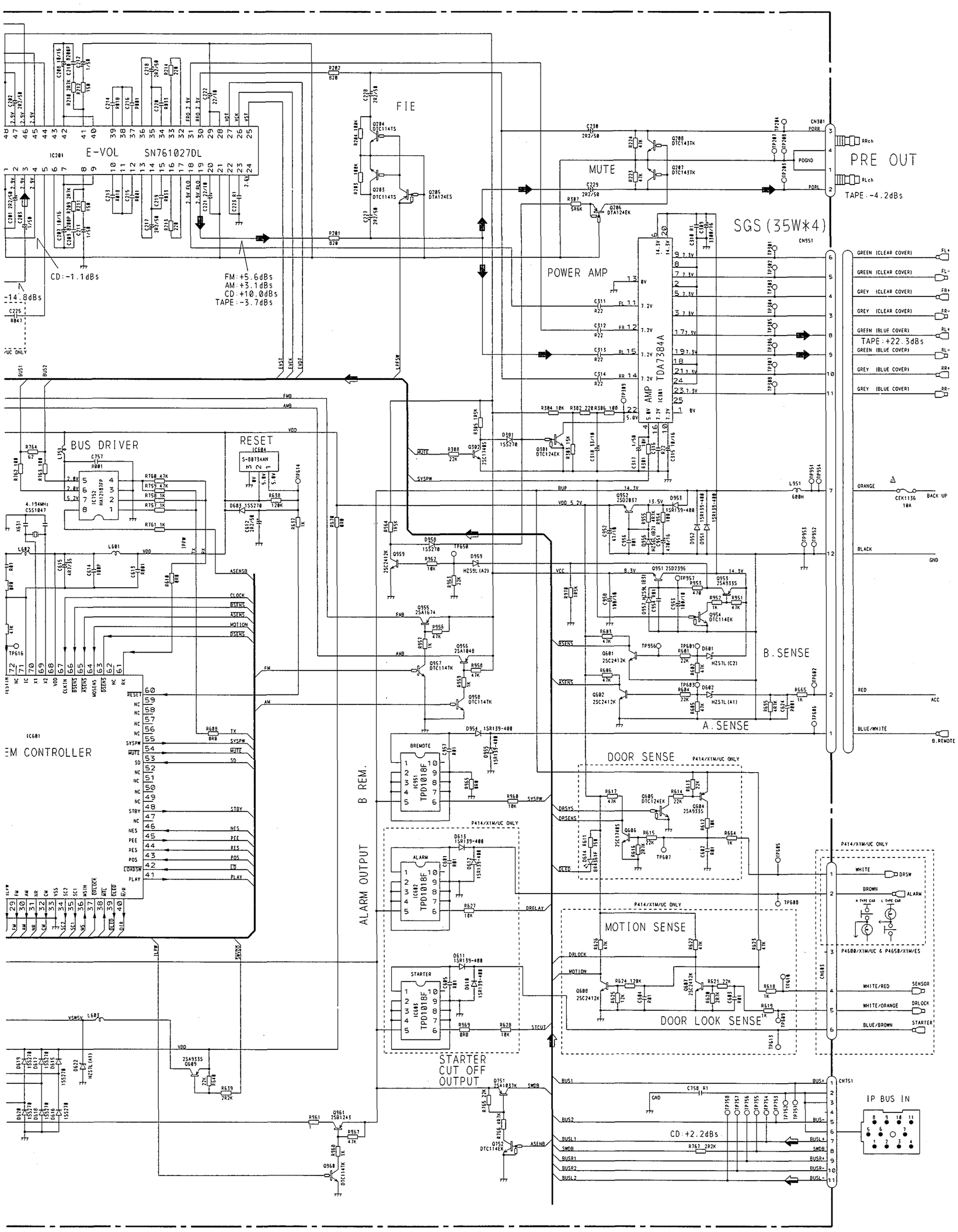
3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".





A-b



NOTE :

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and

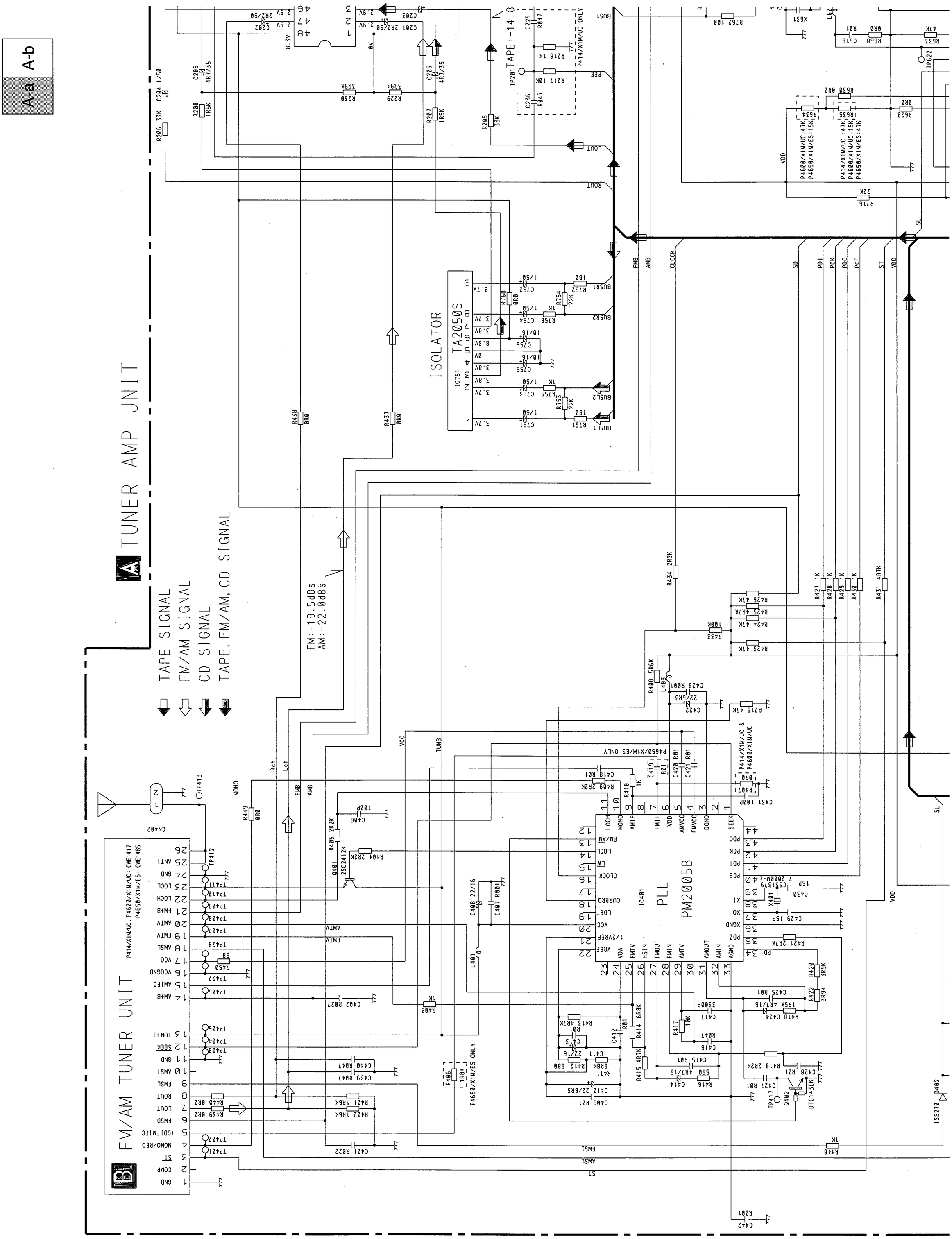
Decimal points for resistor and capacitor fixed values are expressed as.
2.2→2R2

The △mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Fig. 5

A-b

A-a


TUNER AMP UNIT
TAPE SIGNAL
FM/AM SIGNAL
CD SIGNAL
TAPE, FM/AM, CD SIGNAL
FM/AM TUNER UNIT
P414/X1M/UC, P4600/X1M/UC: CWE1417
P4650/X1M/ES: CWE1485
CN402
ISOLATOR
IC751 TA2050S
IC401 PLL PM2005B
TAPE:-14.8
FM:-19.5dBs
AM:-22.0dBs
P4650/X1M/ES ONLY
P414/X1M/UC ONLY
P414/X1M/UC & P4600/X1M/UC
P4600/X1M/UC:47K
P4650/X1M/ES:15K
P414/X1M/UC :47K
P4600/X1M/UC:15K
P4650/X1M/ES:47K
BUS1
LOUT
ROUT
FMB
AMB
CLOCK
SD
PDI
PCK
PDO
PCE
ST
VDD
SL
VCO
TUNB
Rch
Lch
MONO
FMTV
AMTV
FMSL
AMSL
ST
PCE
VDD
1SS270 D402
DTC143EK Q402
7.2000MHz X401
TP413
TP412
TP411
TP410
TP409
TP408
TP407
TP423
TP422
TP406
TP405
TP404
TP403
TP402
TP401
TP417
TP622

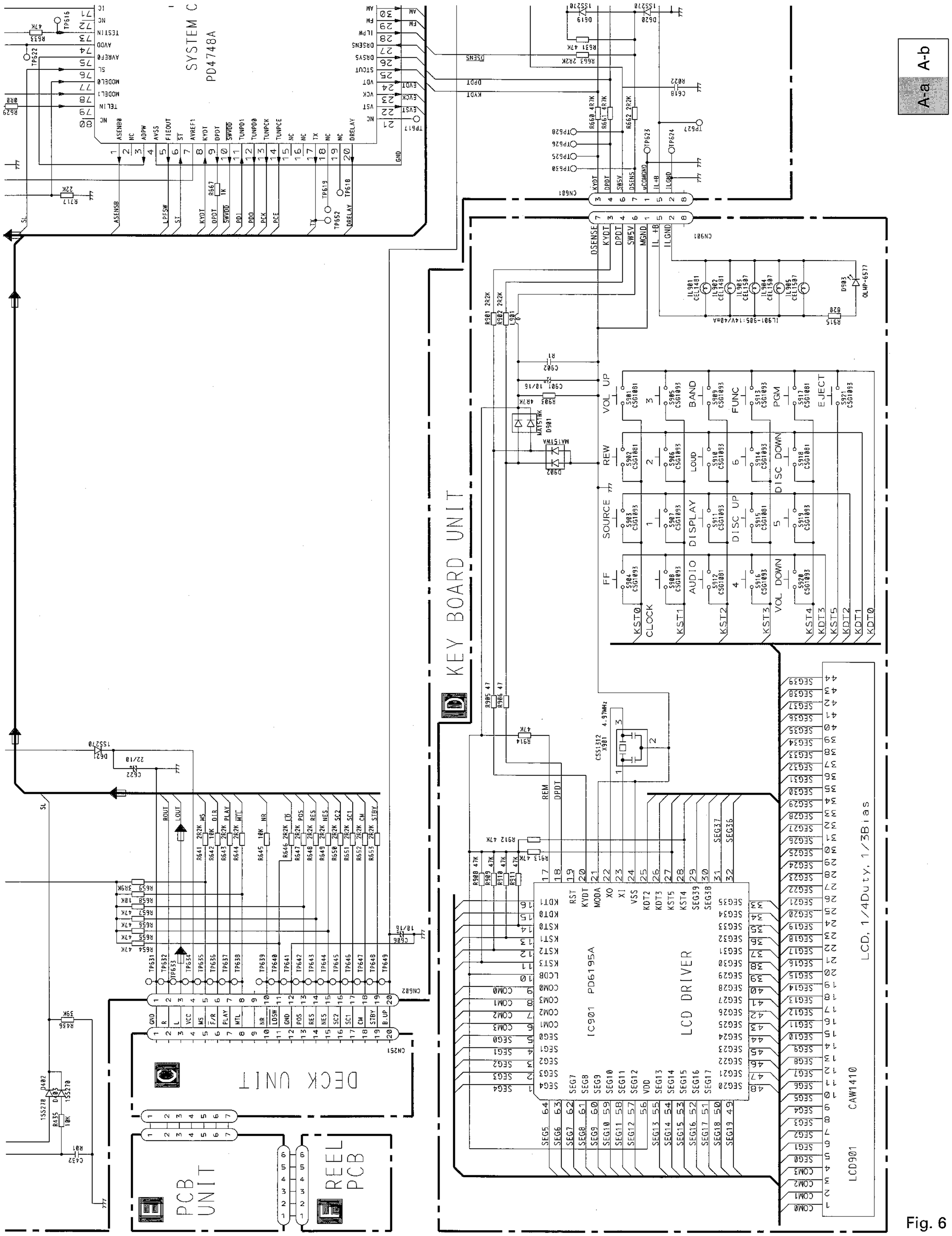
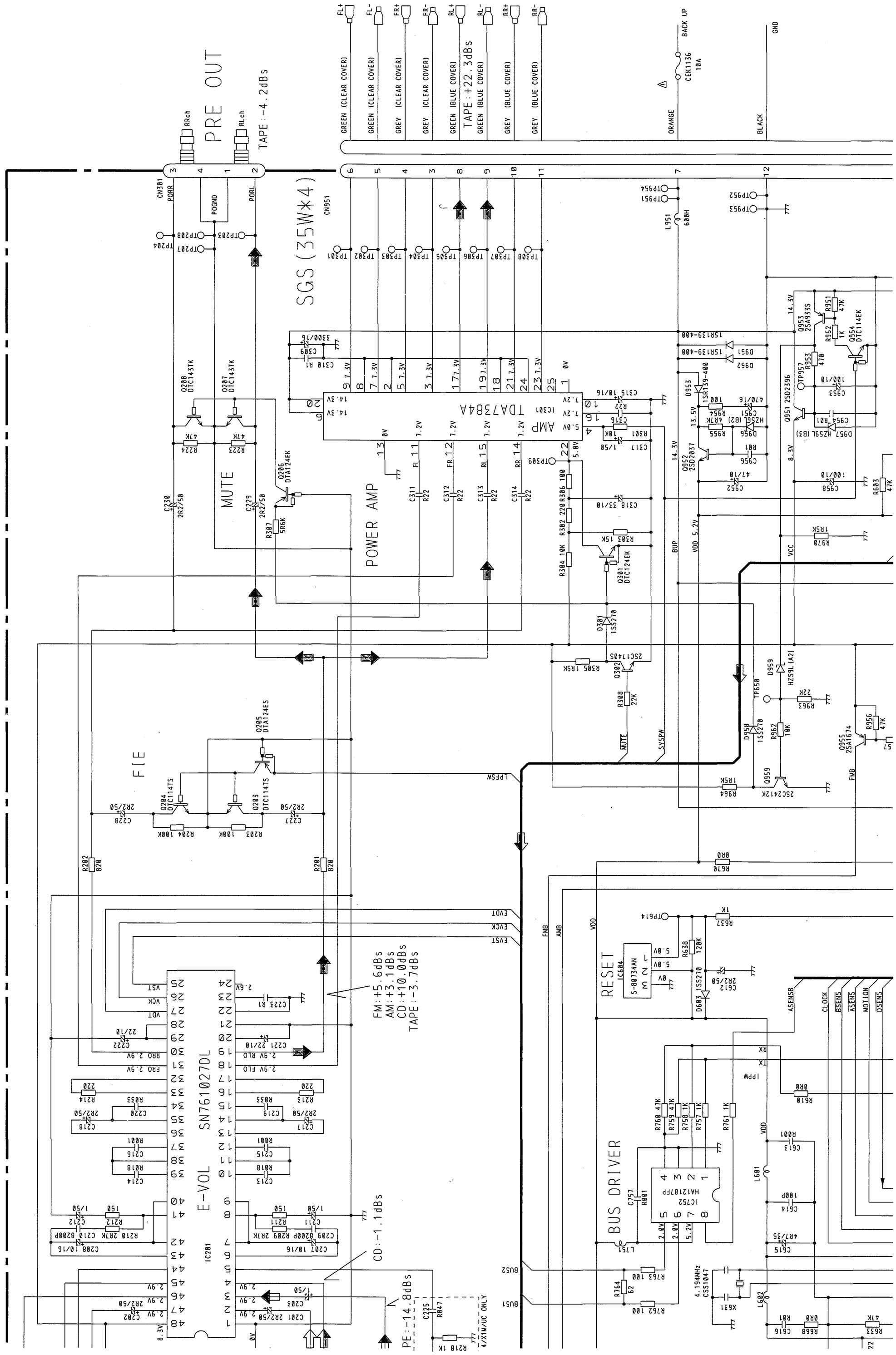

SYSTEM C
PD4748A
KEY BOARD UNIT
DECK UNIT
PCB UNIT
REEL PCB
LCD, 1/4Duty, 1/3Bias
LCD901 CAW1410
IC901 PD6195A
LCD DRIVER
CN601
CN901
CN602
CN251
CN617
VOL UP
REW
SOURCE
3
BAND
FUNC
PGM
EJECT
2
LOUD
6
DISC DOWN
DISPLAY
DISC UP
1
5
FF
AUDIO
4
VOL DOWN
CLOCK
KYDT
DPDT
DSENS
REM
LPFSW
ST
PDI
PDO
PCK
PCE
TX
ROUT
LOUT
MS
DIR
PLAY
MTL
NR
LD
POS
RES
NES
SC2
SC1
CM
STBY
B.UP
F/R
LOSW
VCC
GND
SL
ILPW
DRSENS
DRSVS
STCUT
VDT
VCK
VST
FVDT
FVCK
FVST
FM
AM
ASENSB
ASENS0
ADPW
AVSS
FIEOUT
AVREF1
SWVDD
TUNPD1
TUNPD0
TUNPCK
TUNPCE
DRELAY
TESTIN
AVDD
AVREF0
MODEL0
MODEL1
TELIN
uCOMGND
IL+B
ILGND
MGND
SW5V
IL901-905:14V/40mA
CSS1312 4.97MHz

Fig. 6

KEH-P414,P4600,P4650

A-a A-b



A-a A-b

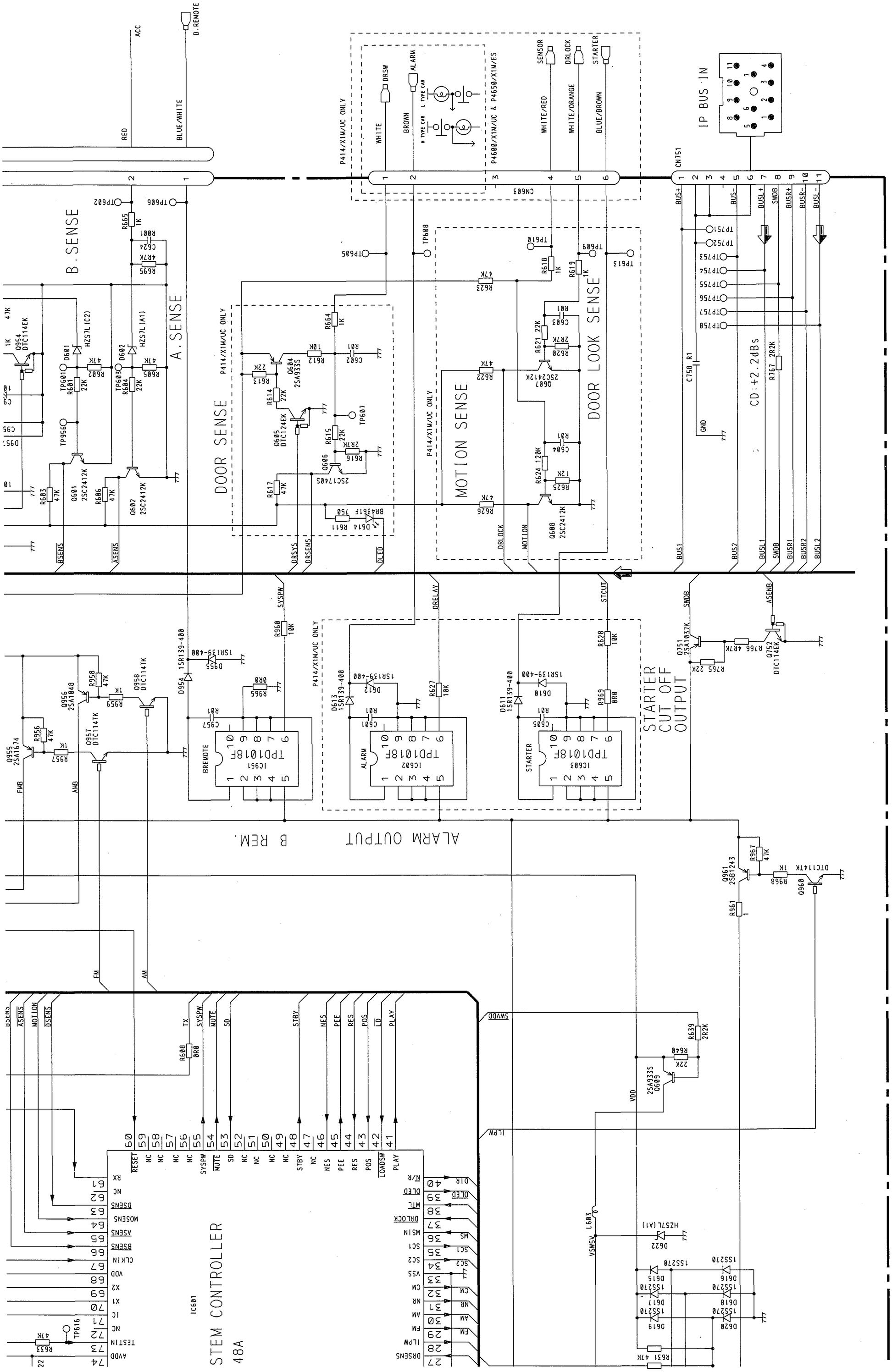
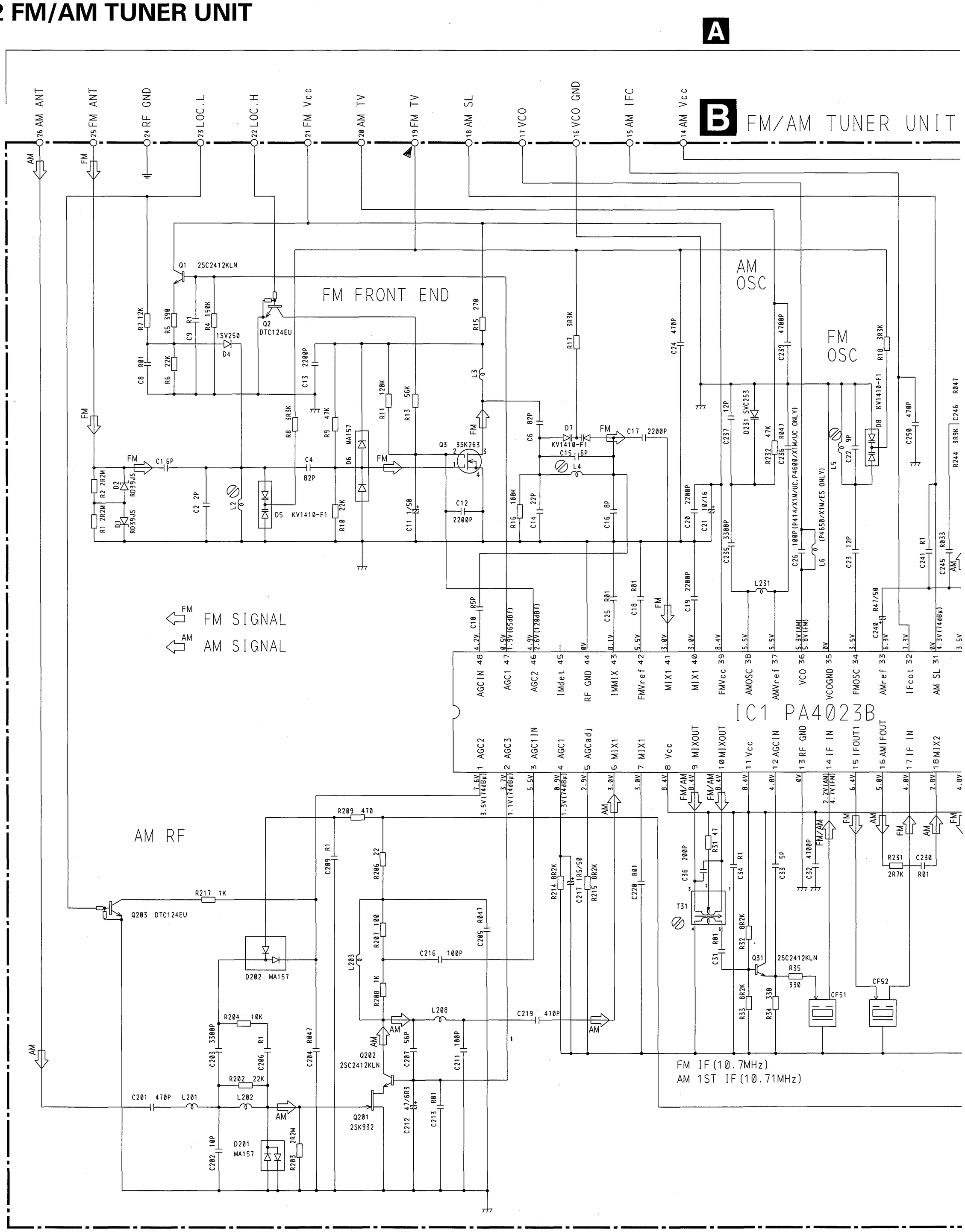

RED
ACC
BLUE/WHITE
B. REMOTE
P414/X1M/UC ONLY
WHITE
DRSW
BROWN
ALARM
H TYPE CAR
L TYPE CAR
P4600/X1M/UC & P4650/X1M/ES
WHITE/RED
SENSOR
WHITE/ORANGE
DRLOCK
BLUE/BROWN
STARTER
CN603
CN751
IP BUS IN
BUS+
BUS-
BUSL+
SWDB
BUSR+
BUSR-
BUSL-
TP751
TP752
TP753
TP754
TP755
TP756
TP757
TP758
C758 R1
GND
CD:+2.2dBs
R767 2R2K
B.SENSE
A.SENSE
DOOR SENSE
P414/X1M/UC ONLY
MOTION SENSE
DOOR LOOK SENSE
TP602
TP606
TP605
TP608
TP610
TP609
TP613
R665 1K
R001
C624
R695 47K/1K
D954 1SR139-400
D955
R960 10K
R0
R965
C957
R01
TP956
Q954 DTC114EK
D601 HZS7L(C2)
D602 HZS7L(A1)
R602 47K
R605 47K
TP601 R601 22K
TP603 R604 22K
Q601 2SC2412K
Q602 2SC2412K
R603 47K
R606 47K
GSENS
ASENS
R664 1K
R612 10K
C602
R613 22K
R614 22K
Q604 2SA933S
Q605 DTC124EK
TP607
R615 22K
R616 2R7K
Q606 2SC1740S
R617 47K
BR4361F 750
D614 R611
DRSYS
DRSENS
DLED
R623 47K
R618 1K
R619 1K
C603
R621 22K
R620 2R7K
Q607 2SC2412K
R622 47K
C604
R624 120K
R625 12K
R626 47K
Q608 2SC2412K
DRLOCK
MOTION
SYSPW
DRELAY
STCUT
R960 10K
R627 10K
R628 10K
R969 0R0
D613 1SR139-400
D611 1SR139-400
D612
D610
C601
C605
P414/X1M/UC ONLY
STARTER CUT OFF OUTPUT
Q751 2SA1037K
R766 47K
R755 22K
Q752 DTC114EK
SWDB
ASENB
R958 47K
Q956 2SA1048
R959 1K
Q958 DTC114TK
Q955 2SA1674
R956 47K
R957 1K
Q957 DTC114TK
FMB
AMB
TPD1018F
IC951
IC602
IC603
BREMOTE
ALARM
STARTER
ALARM OUTPUT B REM.
R961 1
Q961 2SB1243
R967 47K
R968 1K
DTC114TK
Q960
FM
AM
R608 0R0
TX
SYSPW
MUTE
SD
STBY
NES
PEE
RES
POS
LD
PLAY
SWVDD
R639 2R2K
R640 22K
2SA933S Q609
VDD
ILPW
L603
VSW5V
HZS7L (A1)
D622
1SS270
D615
D616
D617
D618
D619
D620
R631 47K
STEM CONTROLLER
48A
IC601
RESET
NC
SYSPW
MUTE
SD
STBY
NES
PEE
RES
POS
LOADSW
PLAY
RX
NC
DSENS
MOSENS
ASENS
BSENS
CLKIN
VDD
X2
X1
IC
NC
TESTIN
AVDD
N/R
DLR
DLED
MTL
DRLOCK
MSIN
SC1
SC2
VSS
CM
NR
AM
FM
ILPW
DRSENS
TP616
R633 47K
22

Fig. 7

3.2 FM/AM TUNER UNIT



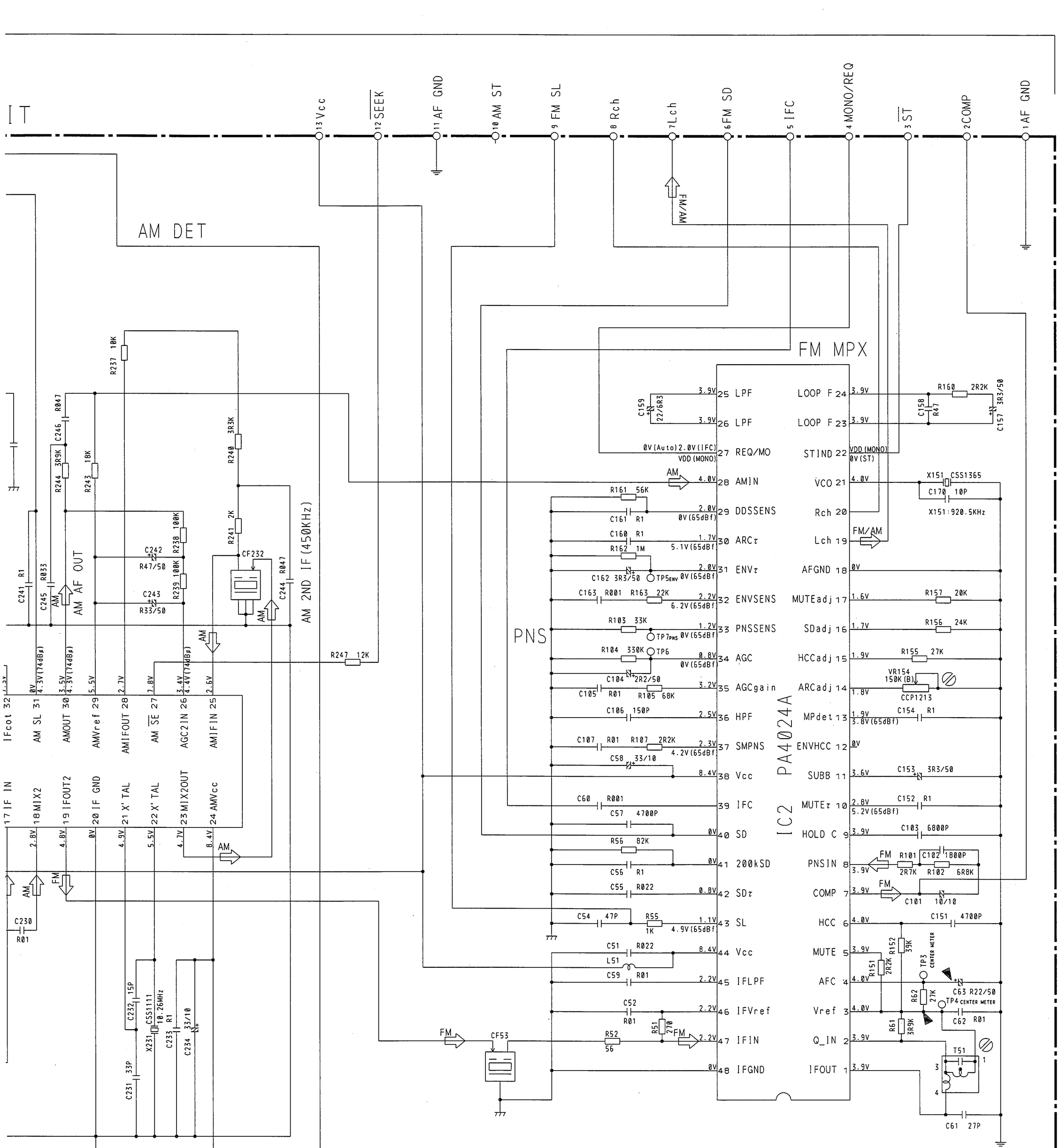
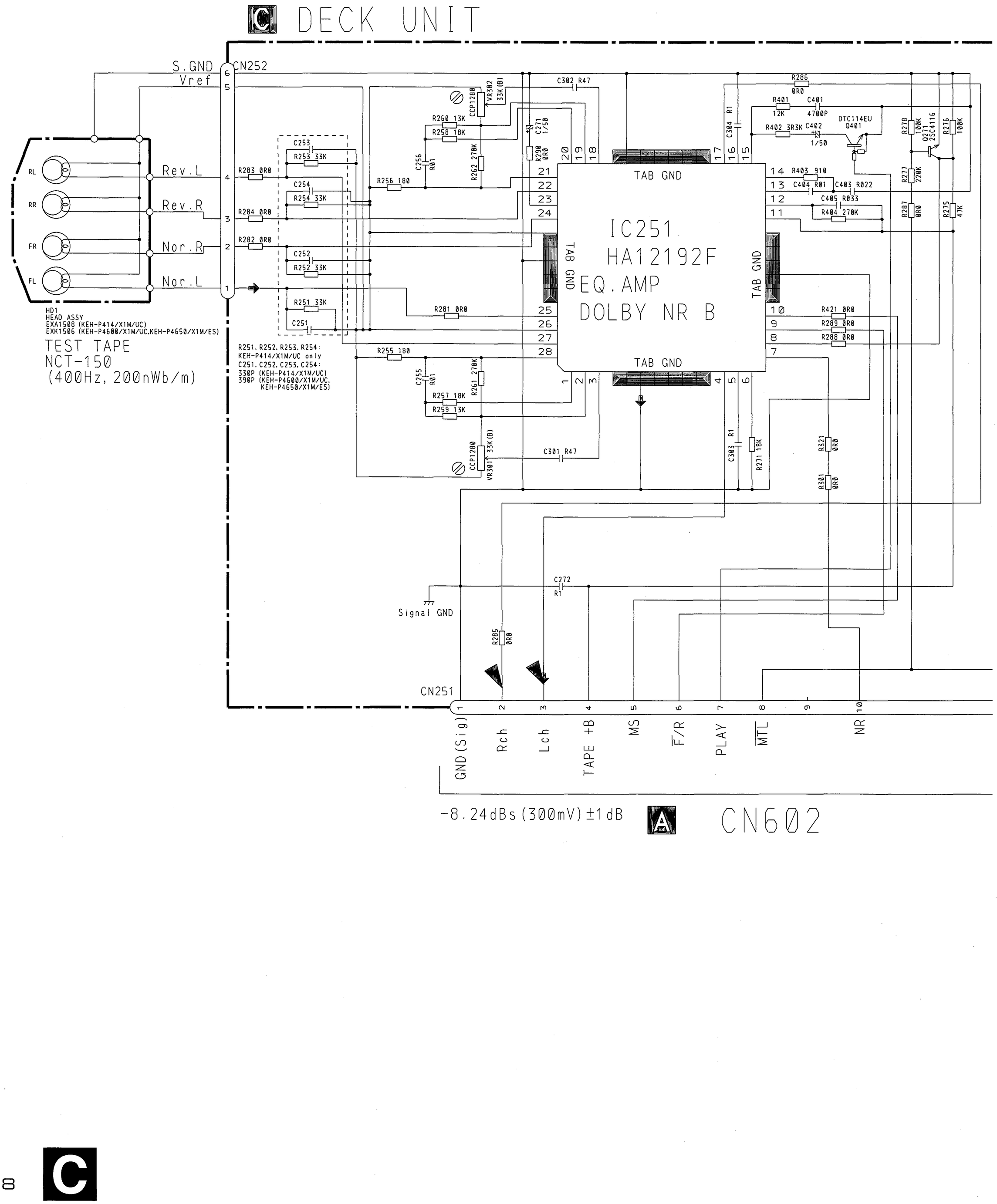
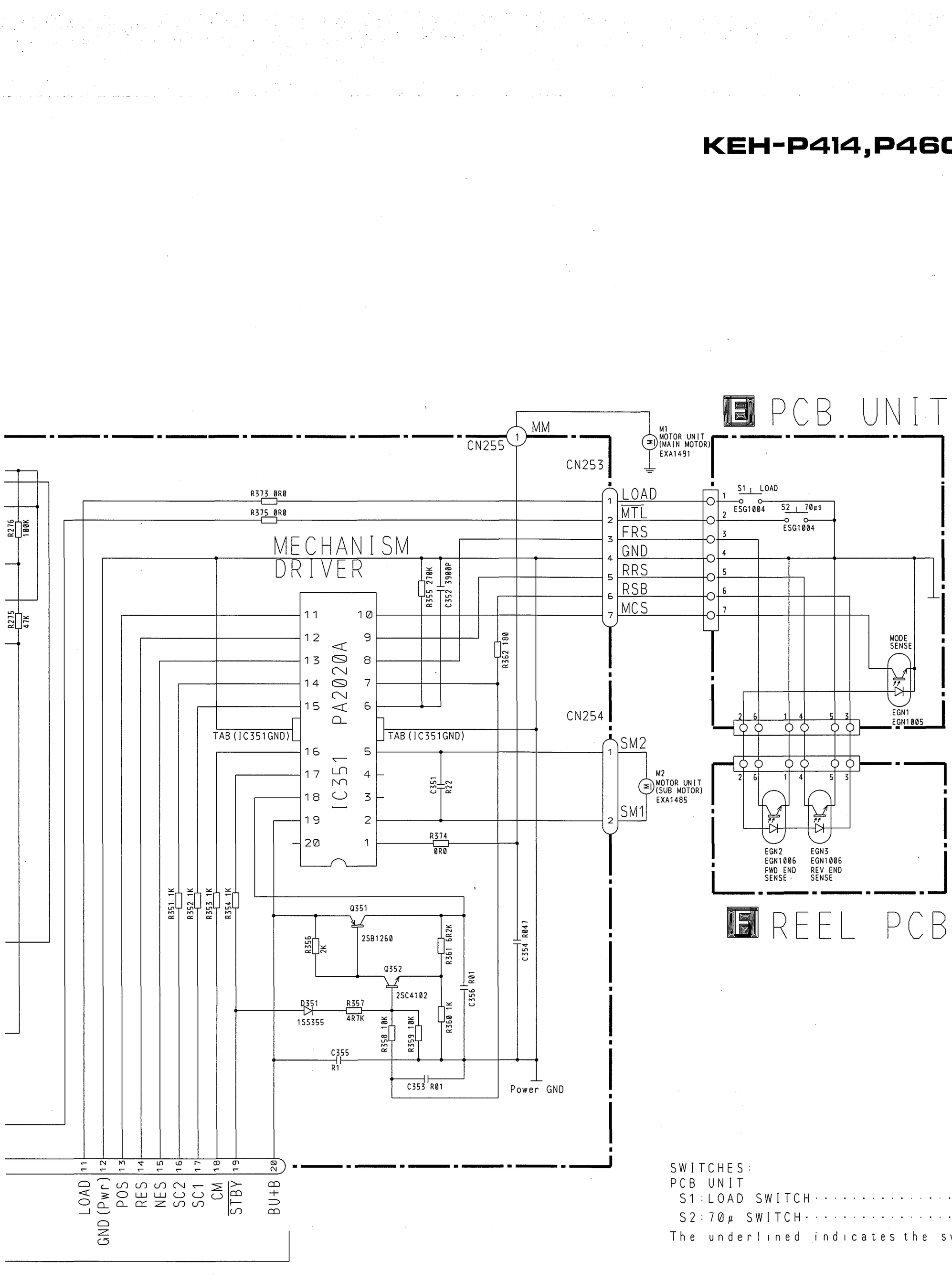

AM DET
AM AF OUT
AM 2ND IF (450KHz)
FM MPX
PNS
PA4024A
IC2
FM IF
FM/AM
AM
FM
R237 10K
R240 3R3K
R241 2K
R238 100K
R239 100K
R247 12K
R244 3R9K
R243 18K
R047
C245
C241 R1
R033
C242 R47/50
C243 R33/50
CF232
C244 R047
C230 R01
C232 15P
X231 CSS1111 10.26MHz
C233 R1
C234 33/10
C231 33P
IFcot 32 1.3V
AM SL 31 0V 4.3V(74dBμ)
AMOUT 30 3.5V 4.3V(74dBμ)
AMVref 29 5.5V
AMIFOUT 28 2.7V
AM SE 27 7.8V
AGC2IN 26 3.4V 4.4V(74dBμ)
AMIFIN 25 2.6V
17 IF IN 2.8V
18 MIX2 4.8V
19 IFOUT2 0V
20 IF GND
21 X'TAL 4.9V
22 X'TAL 5.5V
23 MIX2OUT 4.7V
24 AMVcc 8.4V
25 LPF 3.9V
26 LPF 3.9V
27 REQ/MO 0V(Auto)2.0V(IFC) VDD(MONO)
28 AMIN 4.0V
29 DDSSENS 2.0V 0V(65dBf)
30 ARCτ 1.7V 5.1V(65dBf)
31 ENVτ 2.0V 0V(65dBf)
32 ENVSENS 2.2V 6.2V(65dBf)
33 PNSSENS 1.2V 0V(65dBf)
34 AGC 0.8V 0V(65dBf)
35 AGCgain 3.2V
36 HPF 2.5V
37 SMPNS 2.3V 4.2V(65dBf)
38 Vcc 8.4V
39 IFC
40 SD 0V
41 200kSD 0V
42 SDτ 0.8V
43 SL 1.1V 4.9V(65dBf)
44 Vcc 8.4V
45 IFLPF 2.2V
46 IFVref 2.2V
47 IFIN 2.2V
48 IFGND 0V
LOOP F 24 3.9V
LOOP F 23 3.9V
STIND 22 VDD(MONO) 0V(ST)
VCO 21 4.0V
Rch 20
Lch 19
AFGND 18 0V
MUTEadj 17 1.6V
SDadj 16 1.7V
HCCadj 15 1.9V
ARCadj 14 1.8V
MPdet 13 1.9V 3.8V(65dBf)
ENVHCC 12 0V
SUBB 11 3.6V
MUTEτ 10 2.8V 5.2V(65dBf)
HOLD C 9 3.9V
PNSIN 8 3.9V
COMP 7 3.9V
HCC 6 4.0V
MUTE 5 3.9V
AFC 4 4.0V
Vref 3 4.0V
Q_IN 2 3.9V
IFOUT 1 3.9V
C159 22/6R3
C160 R1
C161 R1
C162 3R3/50
C163 R001
R161 56K
R162 1M
R163 22K
R103 33K
R104 330K
R105 68K
C104 2R2/50
C105 R01
C106 150P
C107 R01
R107 2R2K
C58 33/10
C60 R001
C57 4700P
R56 82K
C56 R1
C55 R022
C54 47P
R55 1K
C51 R022
L51
C59 R01
C52 R01
R51 270
R52 56
TP5ENV
TP7PNS
TP6
R160 2R2K
C158 R47
C157 3R3/50
X151 CSS1365
C170 10P
X151:920.5KHz
R157 20K
R156 24K
R155 27K
VR154 150K(B) CCP1213
C154 R1
C153 3R3/50
C152 R1
C103 6800P
R101 2R7K
C102 1800P
R102 6R8K
C101 10/10
C151 4700P
R152 39K
R151 2R2K
TP3 CENTER METER
R62 27K
C63 R22/50
TP4 CENTER METER
C62 R01
R61 3R9K
T51
C61 27P

Fig. 8

3.3 CASSETTE MECHANISM MODULE





SWITCHES:
PCB UNIT
S1: LOAD SWITCH ..... EJECT-PLAY
S2: 70µ SWITCH ..... ON-OFF
The underlined indicates the switch position.

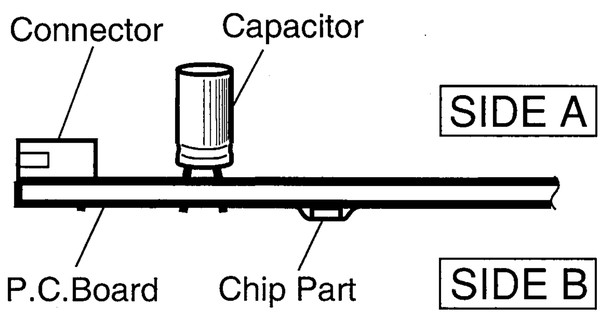
Fig. 9

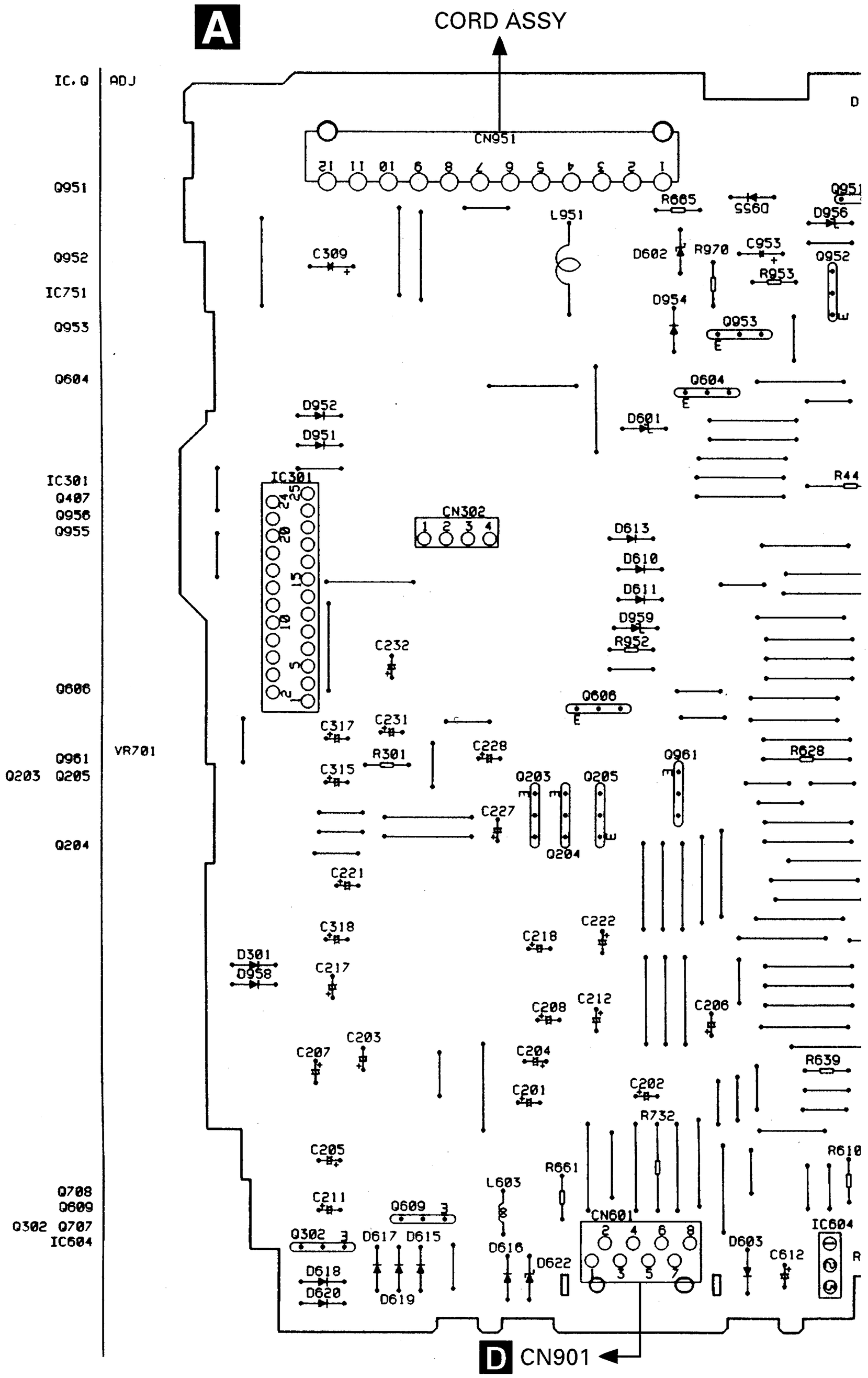
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP PCB

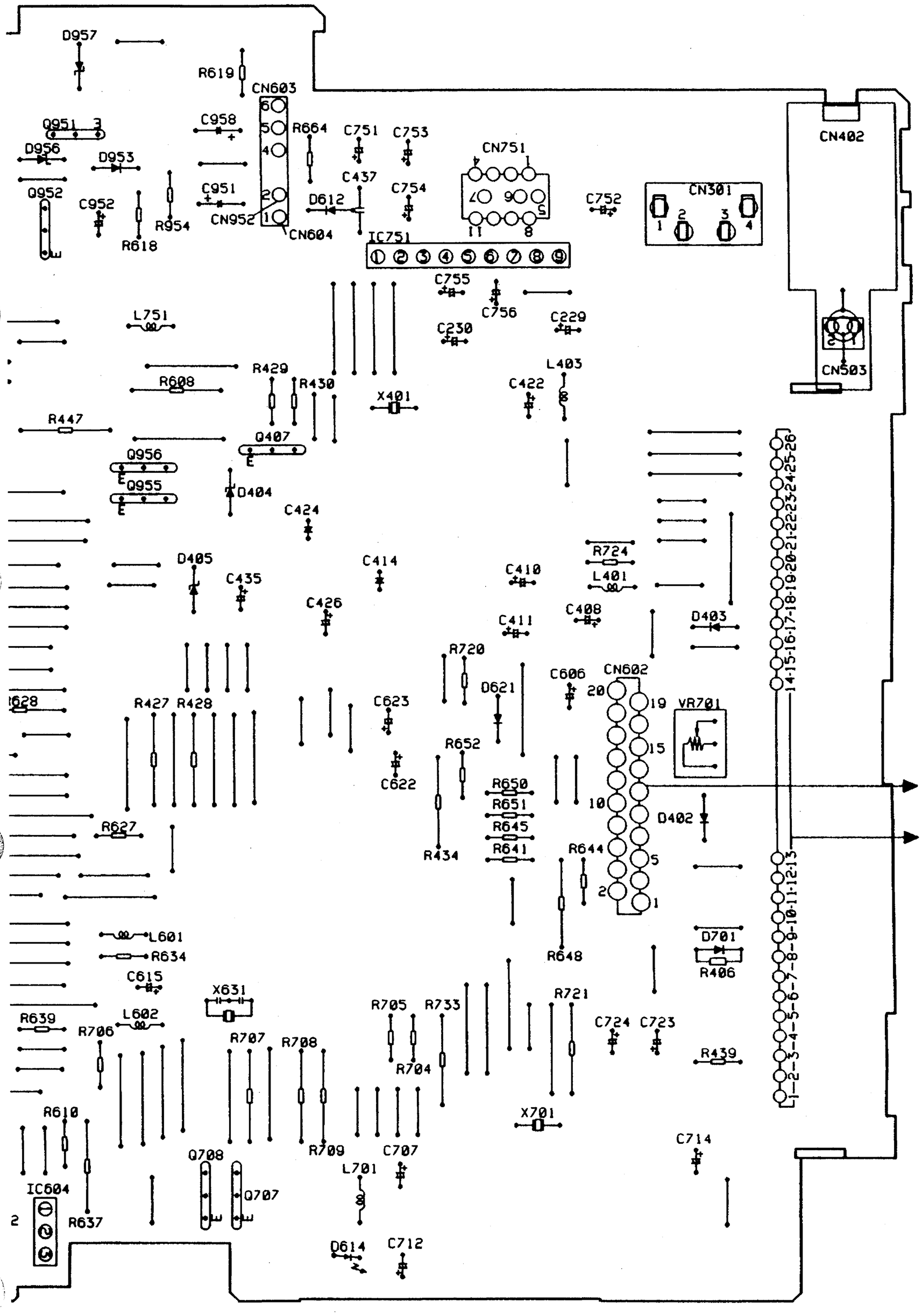
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams





SIDE A

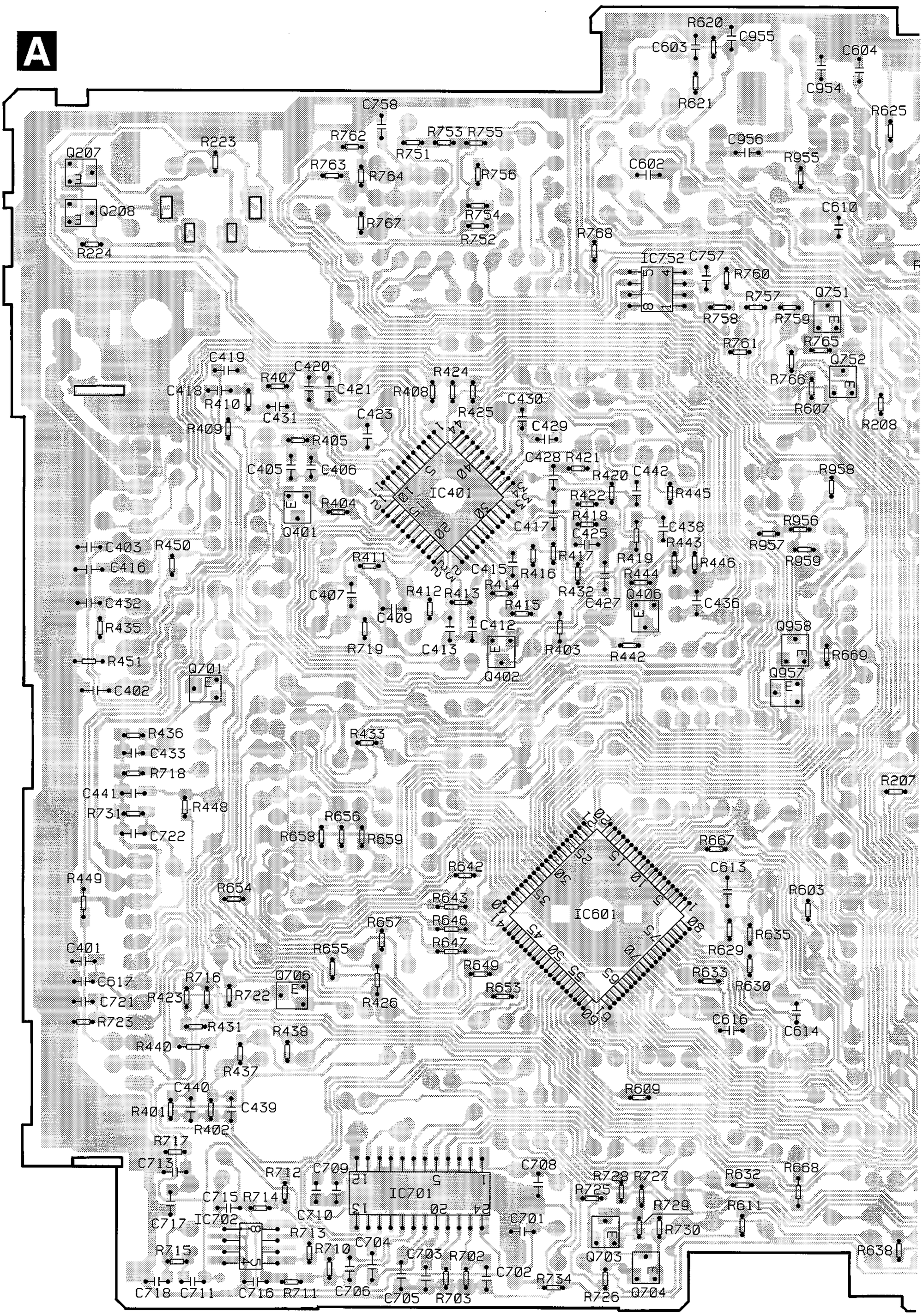


C CN251

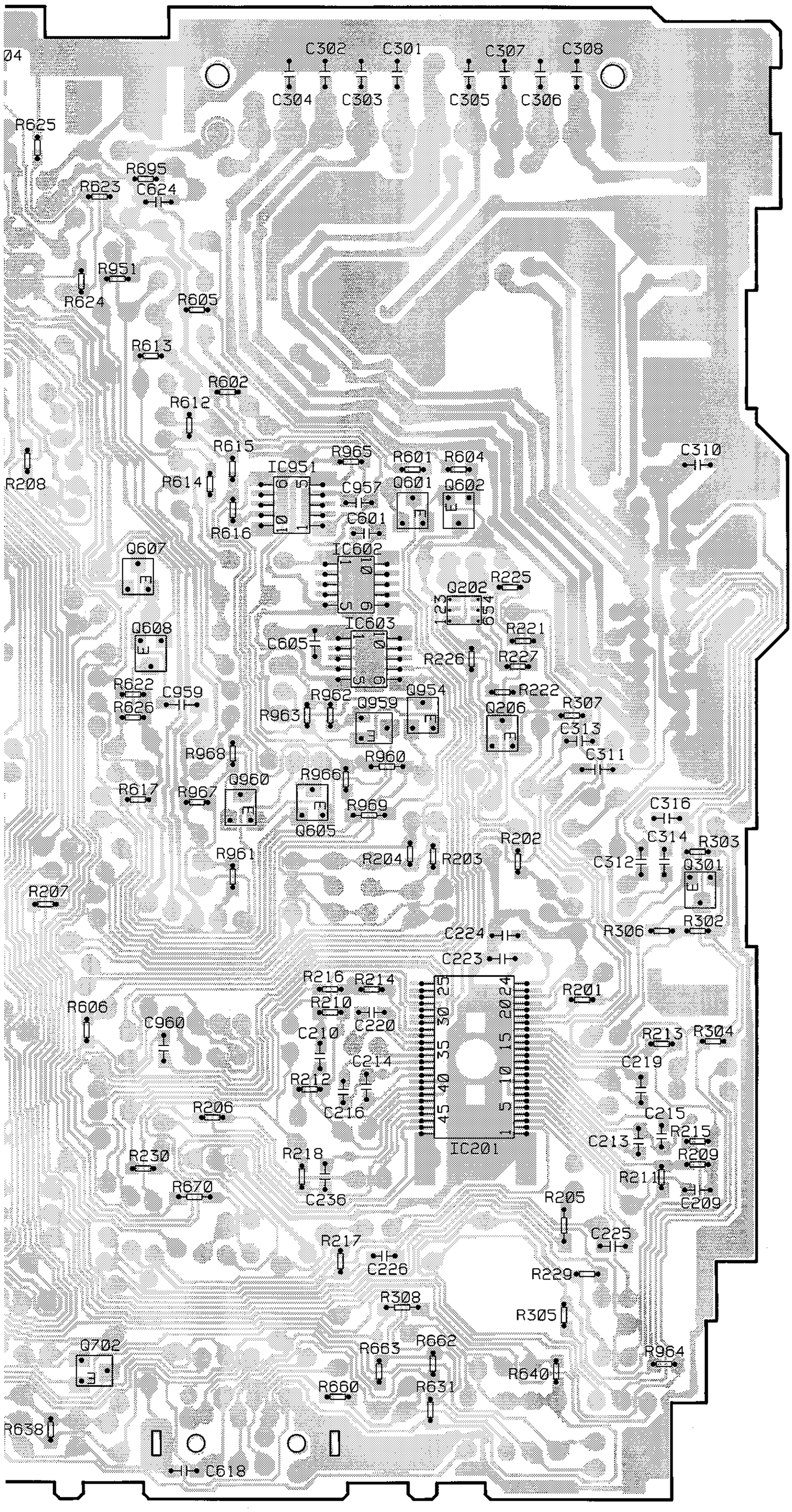
B

Fig. 10

A


R620
C955
C603
C604
C954
R621
R625
C758
R762
R753
R755
R751
R223
C956
R955
Q207
C602
R763
R764
R756
C610
R754
R767
R752
R768
R224
Q208
IC752
C757
R760
R757
Q751
R758
R759
R761
R765
C419
C420
R407
R424
Q752
C418
C421
R408
C430
R766
R607
R208
R410
C431
C423
R425
R409
C429
R405
C428
R421
R958
C405
C406
R420
C442
IC401
R422
R445
R404
R418
R956
Q401
C425
C438
R443
C403
R450
C417
R957
R959
C416
R411
R417
R419
R446
C415
R416
R444
C407
R412
R413
R414
R432
Q406
C436
C432
C409
R415
C412
Q958
R435
R719
C413
R403
R442
R669
Q957
R451
Q701
Q402
C402
R436
R433
C433
R718
R207
C441
R448
R731
R656
R658
R659
C722
R667
R642
C613
R449
R654
R643
R603
R646
R657
IC601
C401
R647
R635
R629
R655
R649
C617
R716
Q706
R633
R653
R630
C721
R423
R722
R426
C616
R723
R431
C614
R438
R440
R437
R609
C440
R401
C439
R402
R717
C713
C708
R712
C709
R728
R727
R632
R668
R725
C715
R714
IC701
R729
R611
C717
IC702
C710
C701
R713
R730
R715
R710
C704
C703
R702
Q703
R638
C718
C711
C716
R711
C706
C705
R703
C702
R734
R726
Q704

SIDE B



IC, Q

Q207

Q208

IC752

Q751

Q752

IC951
Q601
Q602

IC602
IC401 Q607

Q202
Q401
Q608
IC603
Q406
Q959 Q954 Q206
Q958

Q701 Q957
Q402 Q960

Q605

Q301

IC601

Q706

IC201

Q702
IC701
IC702

Q703

Q704

Fig. 11

4.2 KEY BOARD UNIT

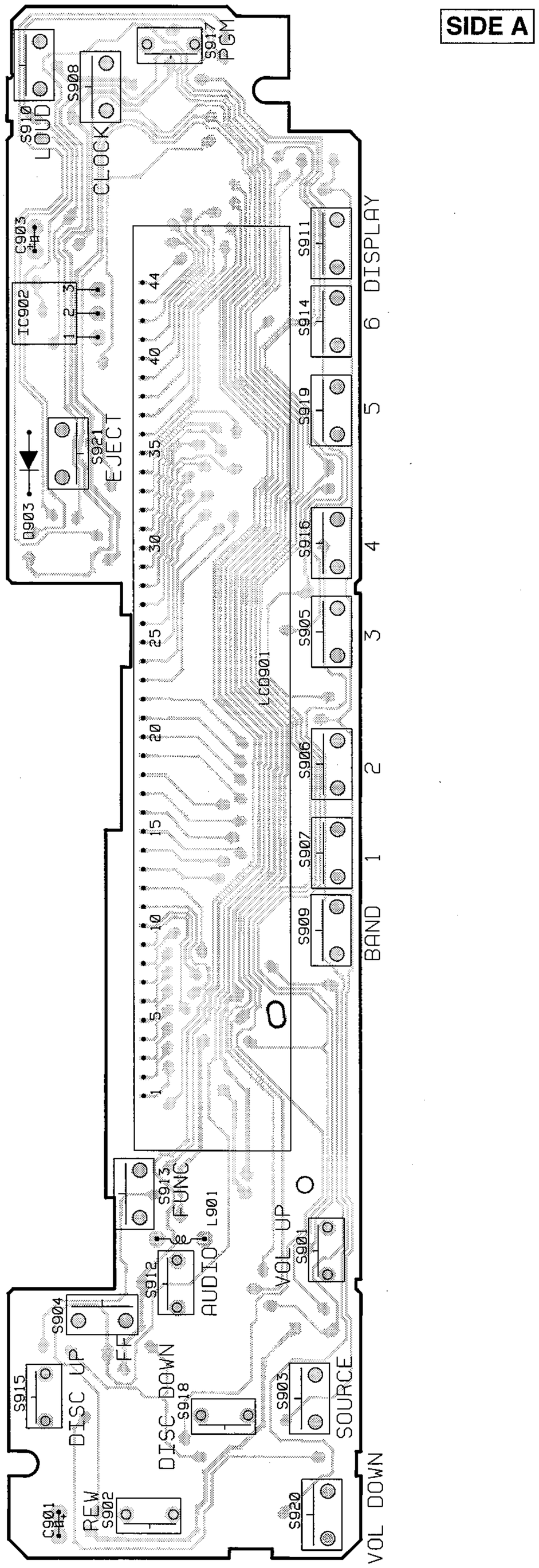


Fig. 12

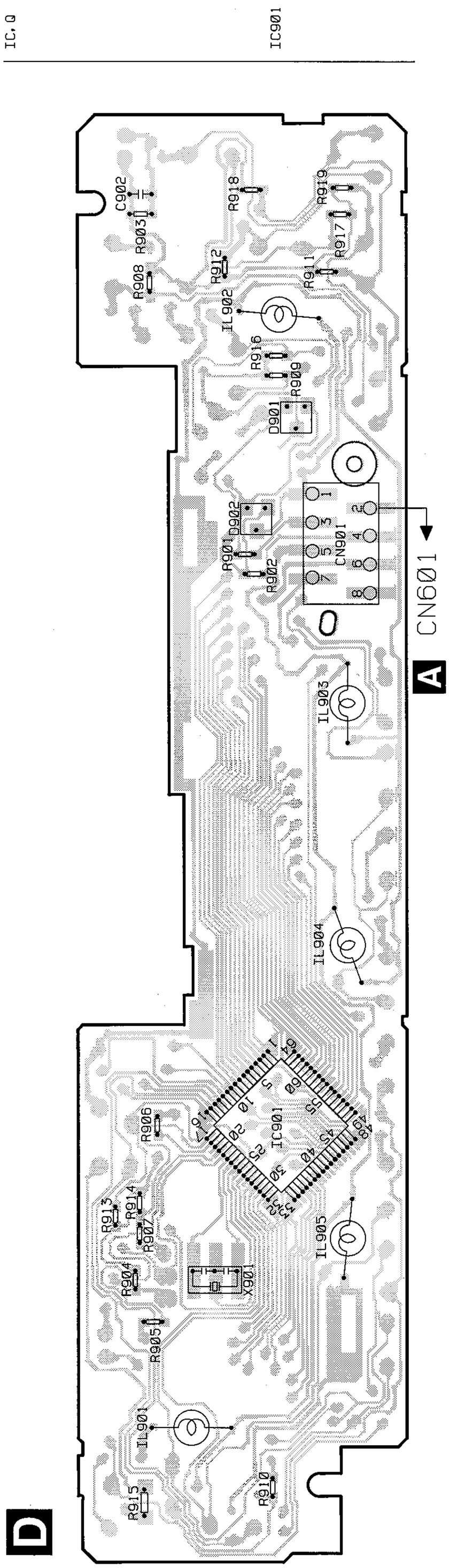

IC,Q
IC901
SIDE B
C902
R903
R908
R918
R912
R919
R917
R911
IL902
R916
R909
D901
D902
R901
R902
CN901
CN601
A
IL903
IL904
IC901
R906
R914
R913
R907
R904
X901
R905
IL905
IL901
R915
R910
D

Fig. 13

4.3 FM/AM TUNER UNIT

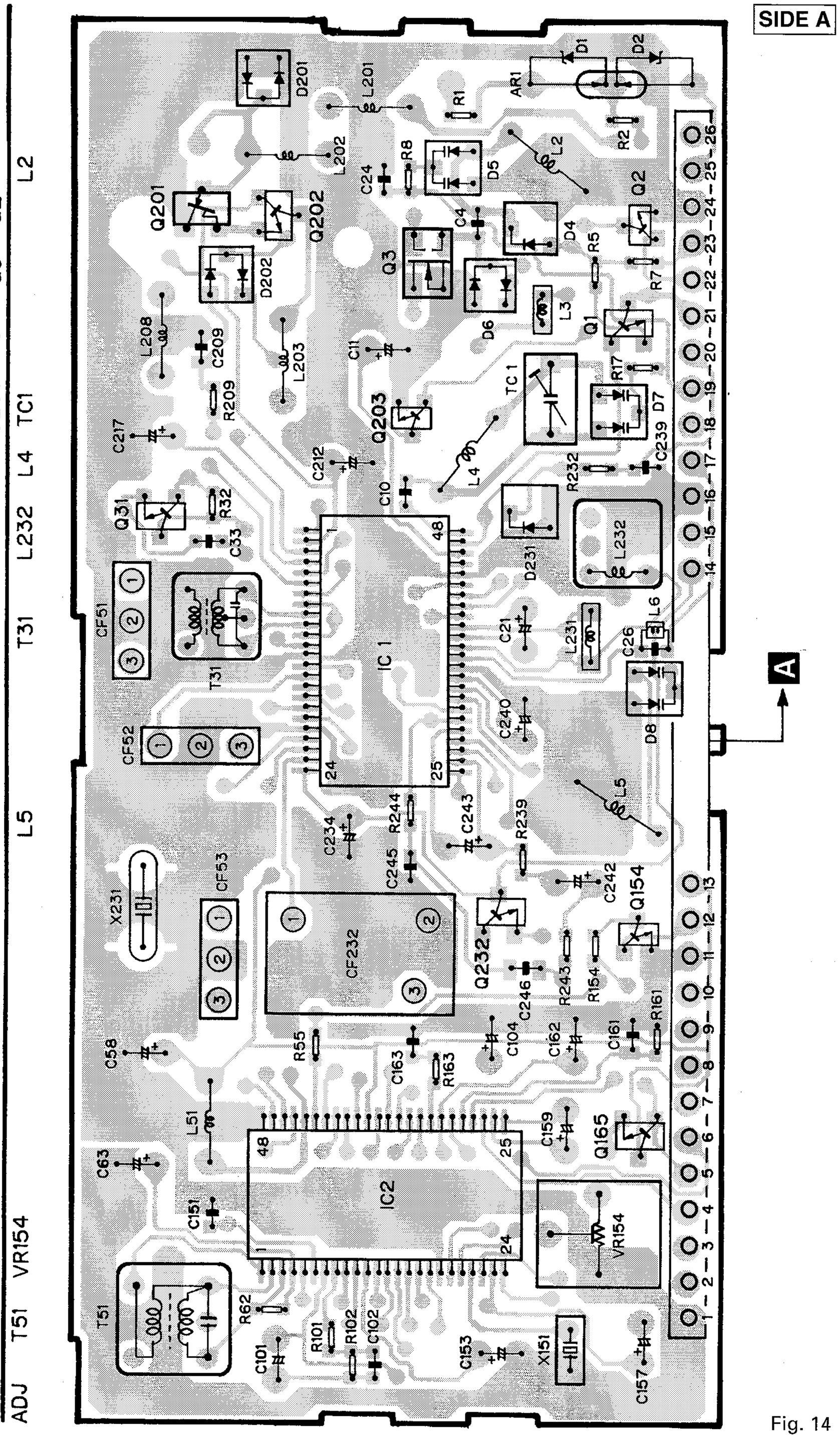
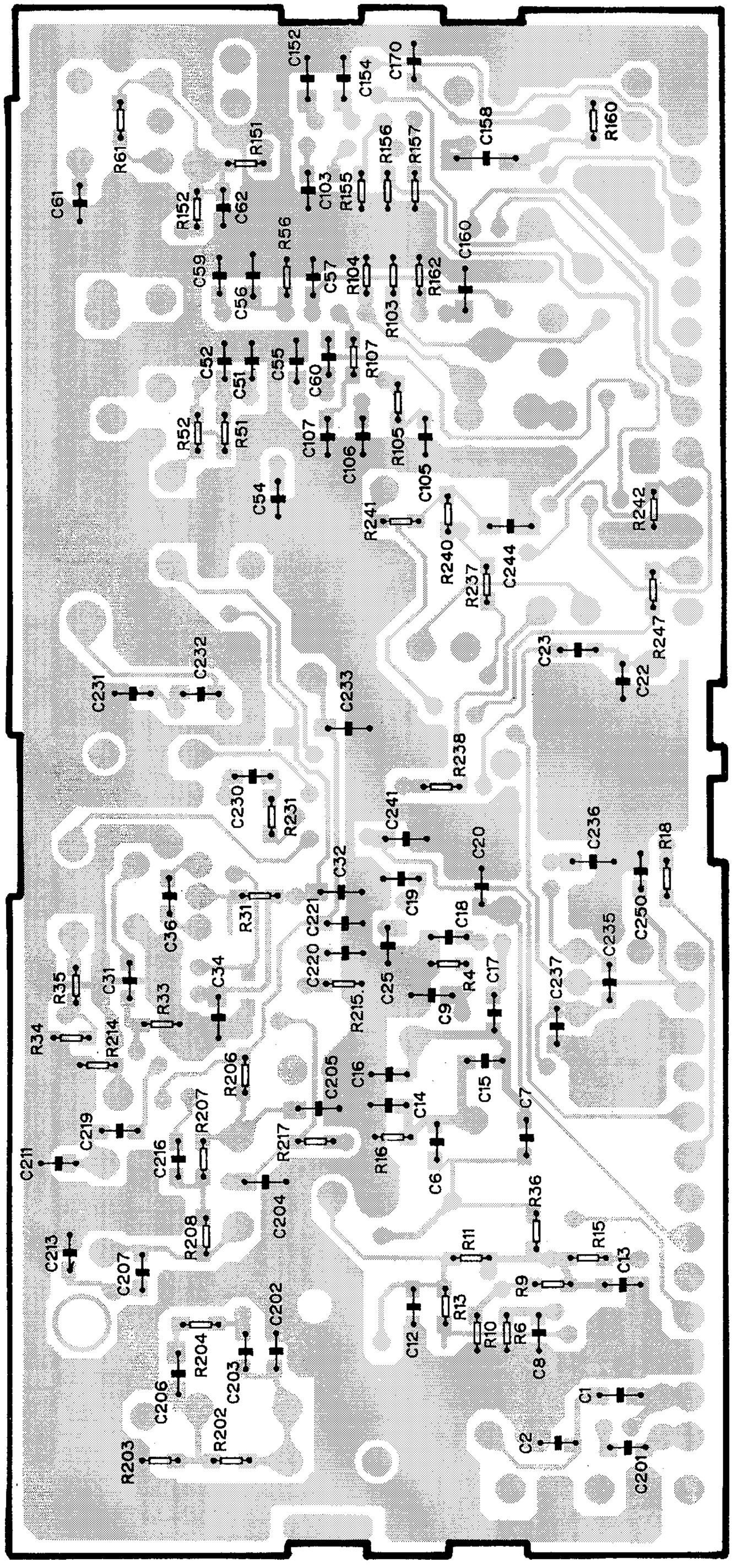


Fig. 14

SIDE B



B

Fig. 15

4.4 CASSETTE MECHANISM MODULE

SIDE A

C DECK UNIT

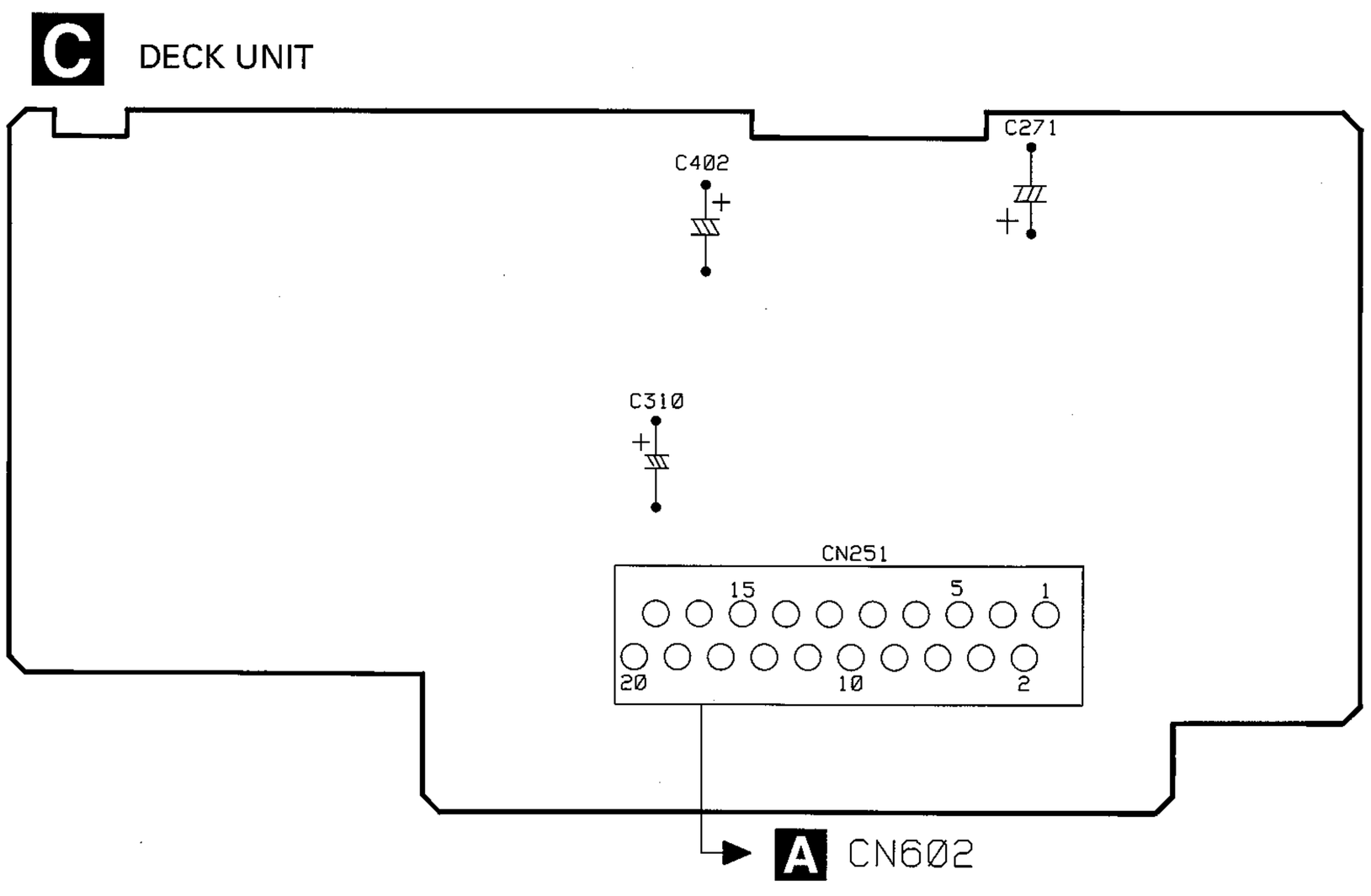
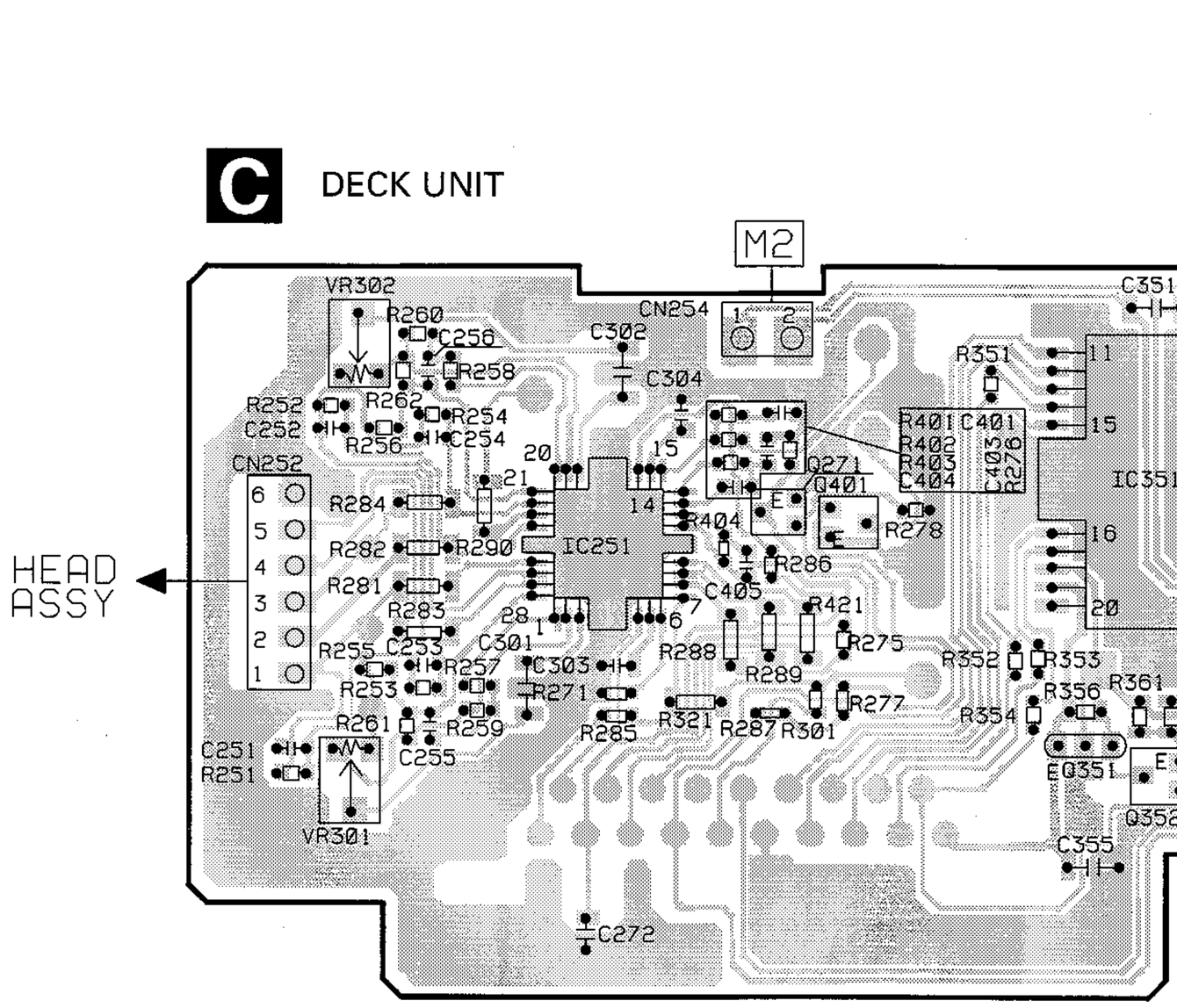


Fig. 16

C DECK UNIT

SIDE B



ADJ	IC, Q
	IC351
VR302	
	Q271
	IC251
	Q401
	Q352
	Q351
VR301	

Fig. 17

E PCB UNIT

SIDE A

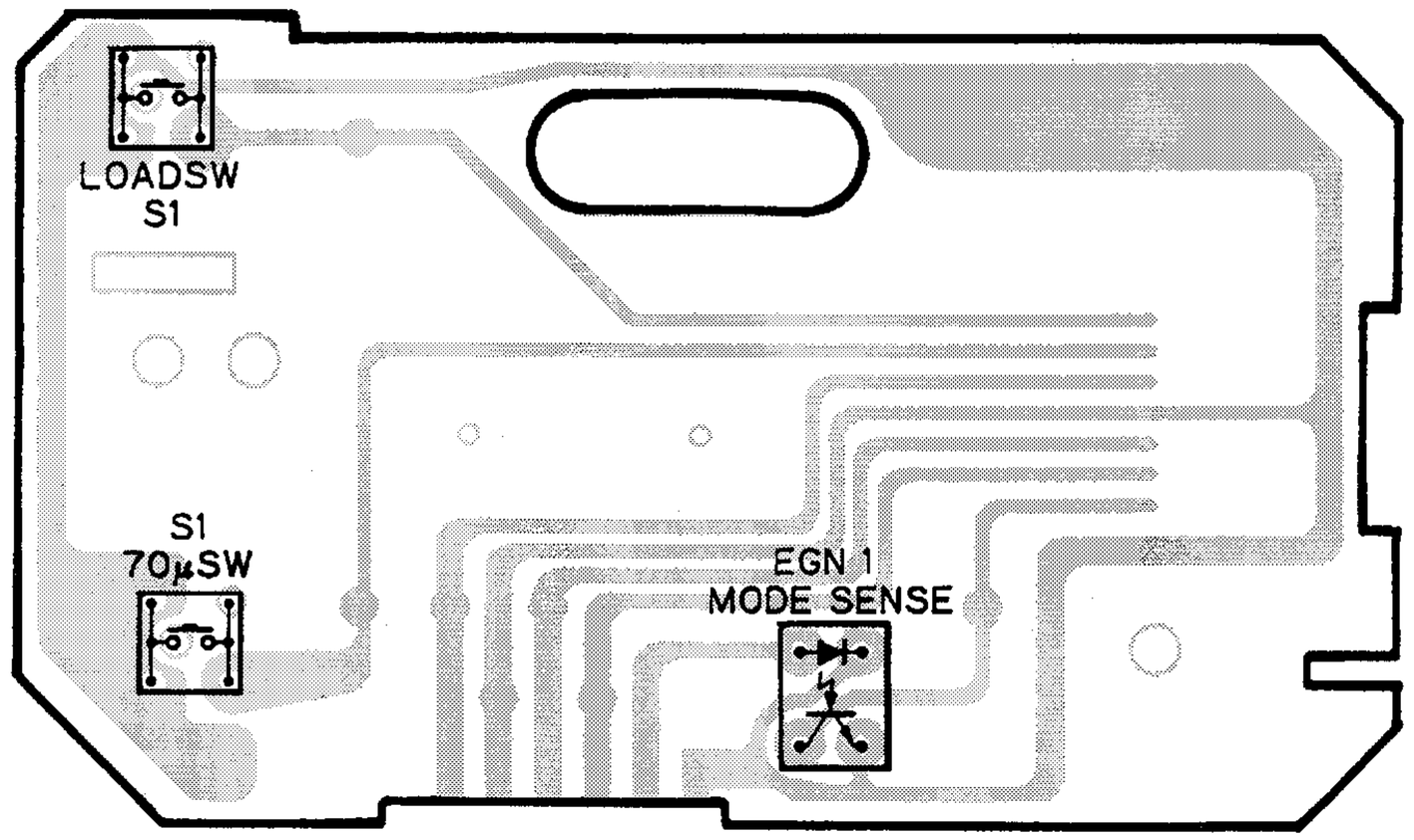


Fig. 18

E PCB UNIT

SIDE B

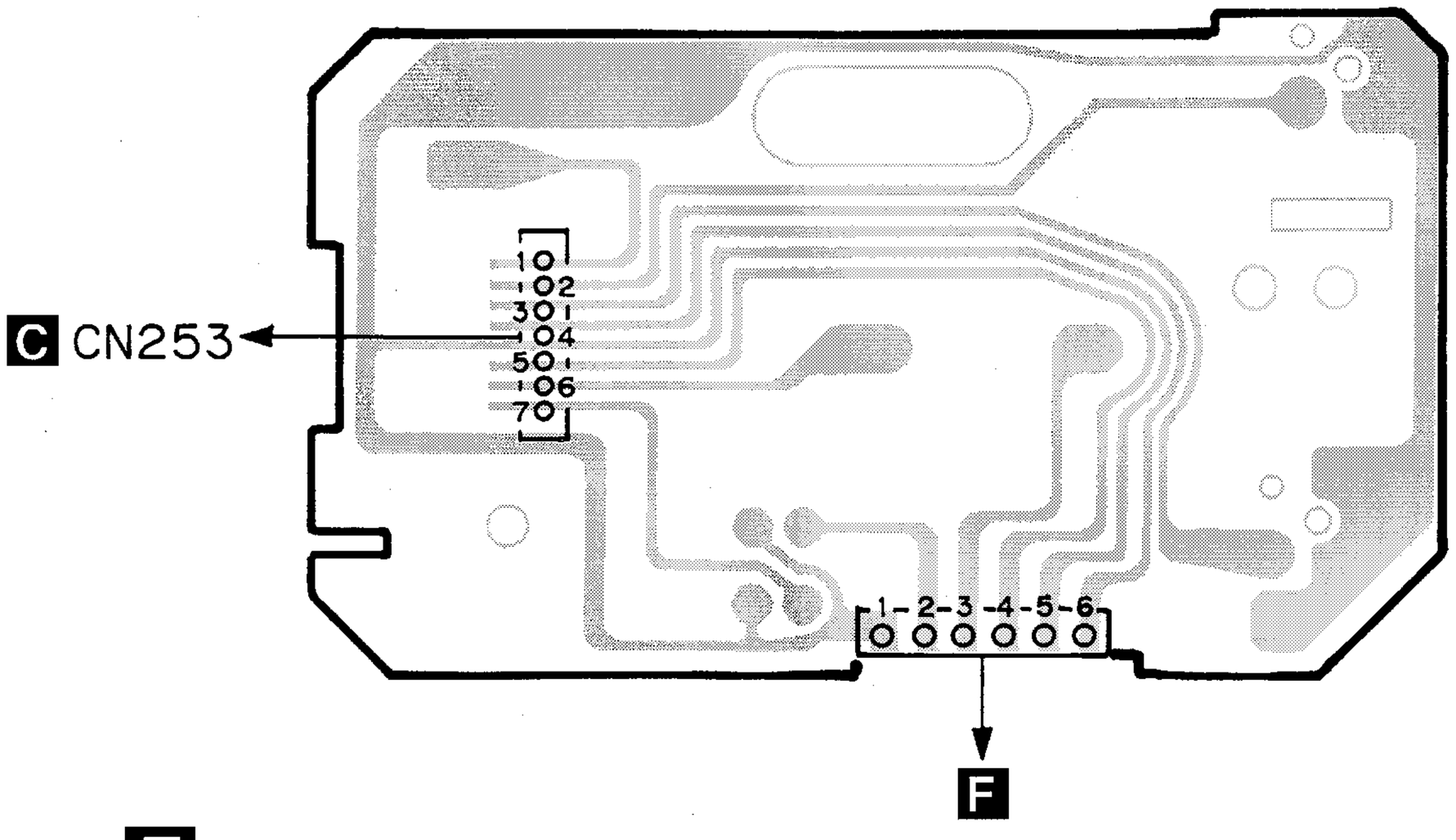


Fig. 19

F REEL PCB

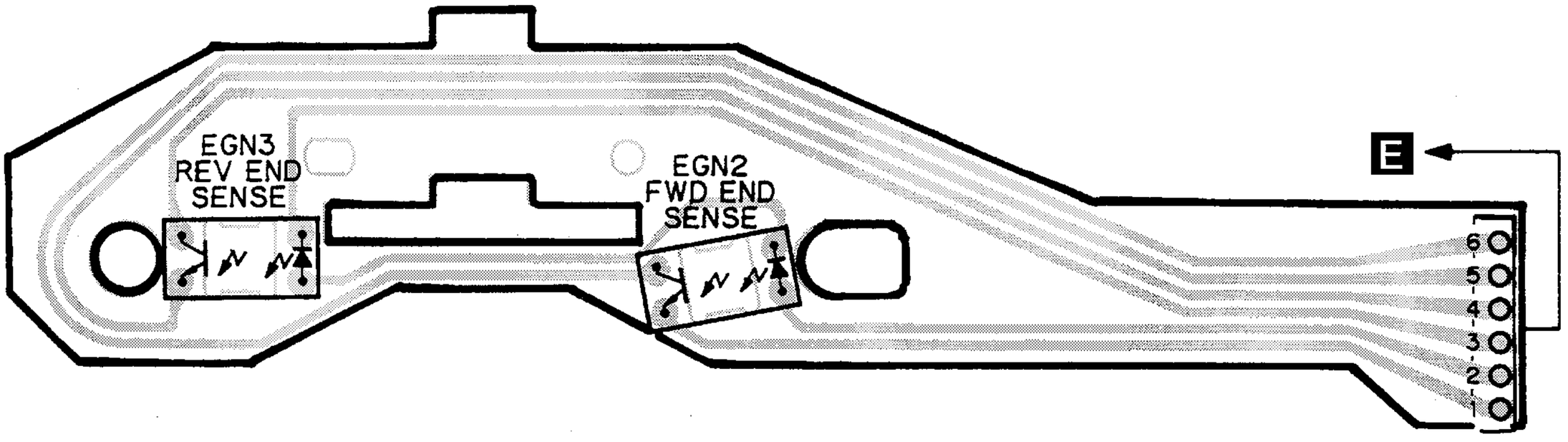


Fig. 20

5. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

  Chip Resistor

  RS1/○S○○○J,RS1/○○S○○○J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....

B Unit Number : CWE1417(P414/X1M/UC,P4600/X1M/UC)
: CWE1485(P4650/X1M/ES)
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

=====Circuit Symbol & No.		===Part Name	Part No.
IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2412KLN
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	31	Transistor	2SC2412KLN
Q	201	FET	2SK932
Q	202	Transistor	2SC2412KLN
Q	203	Transistor	DTC124EU
D	1	Diode	RD39JS
D	2	Diode	RD39JS
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	6	Diode	MA157
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	MA157
D	231	Diode	SVC253
L	2	Coil	CTC1108
L	3	Inductor	LCTB2R2K2125
L	4	Coil	CTC1108
L	5	Coil	CTC1107
L	6	Inductor(P4650/X1M/ES)	LCTBR15K1608
L	51	Ferri-Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1287
L	208	Inductor	LAU121K
L	231	Inductor	LCTA3R3J3225
T	31	Coil	CTE1116
T	51	Coil	CTC1136
CF	51	Ceramic Filter	CTF1290
CF	52	Ceramic Filter	CTF1290
CF	53	Ceramic Filter	CTF1290
CF	232	Ceramic Filter	CTF1348
X	151	Resonator 920.5kHz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	154	Semi-fixed 150kΩ(B)	CCP1213

RESISTORS

=====Circuit Symbol & No.		===Part Name	Part No.
R	1		RS1/16S225J
R	2		RS1/16S225J
R	4		RS1/16S154J
R	5		RS1/16S391J
R	6		RS1/16S223J
R	7		RS1/16S123J
R	8		RS1/16S332J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	13		RS1/16S563J
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S332J
R	18		RS1/16S332J
R	31		RS1/16S470J
R	32		RS1/16S822J
R	33		RS1/16S822J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	51		RS1/16S271J
R	52		RS1/16S560J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S273J
R	101		RS1/16S272J
R	102		RS1/16S682J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/16S222J
R	152		RS1/16S393J
R	155		RS1/16S273J
R	156		RS1/16S243J
R	157		RS1/16S203J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S105J
R	163		RS1/16S223J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S471J
R	214		RS1/16S822J
R	215		RS1/16S102J
R	217		RS1/16S272J
R	231		RS1/16S473J
R	232		RS1/16S103J
R	237		RS1/16S104J
R	238		RS1/16S104J
R	239		RS1/16S332J
R	240		RS1/16S202J
R	241		RS1/16S183J
R	243		RS1/16S392J
R	244		RS1/16S123J
R	247		

Circuit Symbol & No.			Part Name	Part No.
CAPACITORS				
C	1			CCSQCH6R0D50
C	2			CCSRCK2R0C50
C	4			CCSRCH820J50
C	6			CCSRCH820J50
C	8			CKSRYB103K25
C	9			CKSQYB104K16
C	10			CCSRCKR50C50
C	11			CEJA1R0M50
C	12			CKSRYB222K50
C	13			CKSRYB222K50
C	14			CCSRCH220J50
C	15			CCSRCH6R0D50
C	16			CCSRCH8R0D50
C	17			CKSRYB222K50
C	18			CKSRYB103K25
C	19			CKSRYB222K50
C	20			CKSRYB222K50
C	21			CEJA100M16
C	22			CCSRTH9R0D50
C	23			CCSRTH120J50
C	24			CCSRCH471J50
C	25			CKSRYB103K25
C	26		(P414/X1M/UC,P4600/X1M/UC)	CCSRCH101J50
C	31			CKSRYB103K25
C	32			CKSQYB472K50
C	33			CCSRCH5R0C50
C	34			CKSQYB104K16
C	36			CCSRRH201J50
C	51			CKSRYB223K25
C	52			CKSRYB103K25
C	54			CCSRCH470J50
C	55			CKSQYB223K25
C	56			CKSQYB104K16
C	57			CKSRYB472K50
C	58			CEJA330M10
C	59			CKSRYB103K25
C	60			CKSRYB102K50
C	61			CCSRCH270J50
C	62			CKSRYB103K25
C	63			CEJAR22M50
C	101			CEJANP100M10
C	102			CKSRYB182K50
C	103			CKSRYB682K25
C	104			CEJA2R2M50
C	105			CKSRYB103K25
C	106			CCSRCH151J50
C	107			CKSRYB103K25
C	151			CKSRYB472K50
C	152			CKSQYB104K16
C	153			CEJA3R3M50
C	154			CKSQYB104K16
C	157			CEJA3R3M50
C	158			CKSYB474K16
C	159			CEJA220M6R3
C	160			CKSQYB104K16
C	161			CKSQYB104K16
C	162			CEJA3R3M50
C	163			CKSRYB102K50
C	170			CCSRCH100D50
C	201			CCSRCH471J50
C	202			CCSRCH100D50
C	203			CKSRYB332K50
C	204			CKSQYB473K16
C	205			CKSQYB473K16
C	206			CKSQYB104K16
C	207			CCSRCH560J50
C	209			CKSQYB104K16
C	211			CCSRCH101J50
C	212			CEJA470M6R3
C	213			CKSRYB103K25
C	216			CCSRCH101J50
C	217			CEJA1R5M50
C	219			CCSRCH471J50
C	220			CKSRYB103K25
C	230			CKSRYB103K25
C	231			CCSRCH330J50
C	232			CCSRCH150J50
C	233			CKSQYB104K16
C	234			CEJA330M10
C	235			CKSRYB332K50
C	236			CKSQYB473K16
C	237			CCSRCH120J50
C	239			CKSRYB472K50
C	240			CEJAR47M50
C	241			CKSQYB104K16
C	242			CEJAR47M50
C	243			CEJAR33M50
C	244			CKSQYB473K16
C	245			CKSRYB333K16
C	246			CKSQYB473K16
C	250			CCSRCH471J50

A

Unit Number : CWM5263(P414/X1M/UC)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	201	IC		SN761027DL
IC	301	IC		TDA7384A
IC	401	IC		PM2005B
IC	601	IC		PD4748A
IC	602	IC		See Contrast table
IC	603	IC		See Contrast table
IC	604	IC		S-80734AN
IC	751	IC		TA2050S
IC	752	IC		HA12187FP
IC	951	IC		TPD1018F
Q	203	Transistor		DTC114TS
Q	204	Transistor		DTC114TS
Q	205	Transistor		DTA124ES
Q	206	Transistor		DTC124EK
Q	207	Transistor		DTC143TK
Q	208	Transistor		DTC143TK
Q	301	Transistor		DTC124EK
Q	302	Transistor		2SC1740S
Q	401	Transistor		2SC2412K
Q	402	Transistor		DTC143EK
Q	601	Transistor		2SC2412K
Q	602	Transistor		2SC2412K
Q	604	Transistor		See Contrast table
Q	605	Transistor		See Contrast table
Q	606	Transistor		See Contrast table
Q	607	Transistor		See Contrast table
Q	608	Transistor		See Contrast table
Q	609	Transistor		2SA933S
Q	751	Transistor		2SA1037K
Q	752	Transistor		DTC114EK
Q	951	Transistor		2SD2396
Q	952	Transistor		2SD2037
Q	953	Transistor		2SA933S
Q	954	Transistor		DTC114EK
Q	955	Transistor		2SA1674

Circuit Symbol & No.		Part Name	Part No.
Q	956	Transistor	2SA1048
Q	957	Transistor	DTC114TK
Q	958	Transistor	DTC114TK
Q	959	Transistor	2SC2412K
Q	960	Transistor	DTC114TK
Q	961	Transistor	2SB1243
D	301	Diode	1SS270
D	402	Diode	1SS270
D	403	Diode	1SS270
D	601	Diode	HZS7L(C2)
D	602	Diode	HZS7L(A1)
D	603	Diode	1SS270
D	610	Diode	See Contrast table
D	611	Diode	See Contrast table
D	612	Diode	See Contrast table
D	613	Diode	See Contrast table
D	614	LED	See Contrast table
D	615	Diode	1SS270
D	616	Diode	1SS270
D	617	Diode	1SS270
D	618	Diode	1SS270
D	619	Diode	1SS270
D	620	Diode	1SS270
D	621	Diode	1SS270
D	622	Diode	HZS7L(A1)
D	951	Diode	1SR139-400
D	952	Diode	1SR139-400
D	953	Diode	1SR139-400
D	954	Diode	1SR139-400
D	955	Diode	1SR139-400
D	956	Diode	HZS6L(B2)
D	957	Diode	HZS9L(B3)
D	958	Diode	1SS270
D	959	Diode	HZS9L(A2)
L	401	Ferri-Inductor	LAU2R2K
L	403	Ferri-Inductor	LAU2R2K
L	601	Ferri-Inductor	LAU2R2K
L	602	Ferri-Inductor	LAU2R2K
L	603	Ferri-Inductor	LAU2R2K
L	751	Ferri-Inductor	LAU2R2K
L	951	600H	CTH1171
X	401	Crystal Resonator 7.200MHz	CSS1379
X	631	Ceramic Resonator 4.194MHz	CSS1047
		FM/AM Tuner Unit	See Contrast table

RESISTORS

Circuit Symbol & No.		Part Name	Part No.
R	201		RS1/10S821J
R	202		RS1/10S821J
R	203		RS1/10S104J
R	204		RS1/10S104J
R	205		RS1/8S333J
R	206		RS1/10S333J
R	207		RS1/10S152J
R	208		RS1/10S152J
R	209		RS1/10S272J
R	210		RS1/10S272J
R	211		RS1/10S151J
R	212		RS1/10S151J
R	213		RS1/10S221J
R	214		RS1/10S221J
R	217		See Contrast table
R	218		See Contrast table
R	223		RS1/10S473J
R	224		RS1/10S473J
R	229		RS1/10S392J
R	230		RS1/10S392J
R	301		RD1/4PU103J
R	302		RS1/10S221J
R	303		RS1/10S153J
R	304		RS1/10S103J
R	305		RS1/10S152J
R	306		RS1/10S101J
R	307		RS1/10S562J
R	308		RS1/8S223J
R	401		RS1/10S162J
R	402		RS1/10S162J
R	403		RS1/8S102J
R	404		RS1/10S222J
R	405		RS1/10S222J
R	406		See Contrast table
R	407		See Contrast table
R	408		RS1/10S562J
R	409		RS1/10S222J
R	410		RS1/10S102J
R	411		RS1/10S682J
R	412		RS1/10S681J
R	413		RS1/10S472J
R	414		RS1/10S682J
R	415		RS1/10S472J
R	416		RS1/10S561J
R	417		RS1/10S103J
R	418		RS1/10S152J
R	419		RS1/8S222J
R	420		RS1/10S392J
R	421		RS1/10S272J
R	422		RS1/10S392J
R	423		RS1/10S473J
R	424		RS1/10S473J
R	425		RS1/10S472J
R	426		RS1/8S473J
R	427		RD1/4PU102J
R	428		RD1/4PU102J
R	429		RD1/4PU102J
R	430		RD1/4PU102J
R	431		RS1/10S472J
R	433		RS1/10S104J
R	434		RD1/4PU222J
R	435		RS1/10S103J
R	436		RS1/10S393J
R	437		RS1/10S0R0J
R	438		RS1/10S0R0J
R	439		RD1/4PU0R0J
R	440		RS1/8S0R0J
R	448		RS1/10S102J
R	449		RS1/8S0R0J
R	450		RS1/10S680J
R	601		RS1/10S223J
R	602		RS1/10S473J
R	603		RS1/10S473J
R	604		RS1/10S223J
R	605		RS1/10S473J
R	606		RS1/10S473J
R	608		RD1/4PU0R0J
R	610		RD1/4PU0R0J
R	611		See Contrast table
R	612		See Contrast table
R	613		See Contrast table
R	614		See Contrast table
R	615		See Contrast table
R	616		See Contrast table
R	617		See Contrast table

Circuit Symbol & No.	Part Name	Part No.
R 618		See Contrast table
R 619		See Contrast table
R 620		See Contrast table
R 621		See Contrast table
R 622		See Contrast table
R 623		See Contrast table
R 624		See Contrast table
R 625		See Contrast table
R 626		See Contrast table
R 627		See Contrast table
R 628		See Contrast table
R 629		RS1/10S0R0J
R 630		RS1/10S0R0J
R 631		RS1/10S473J
R 633		RS1/10S473J
R 634		See Contrast table
R 635		RS1/10S473J
R 637		RD1/4PU102J
R 638		RS1/10S124J
R 639		RD1/4PU222J
R 640		RS1/10S223J
R 641		RD1/4PU222J
R 642		RS1/10S103J
R 643		RS1/8S222J
R 644		RD1/4PU222J
R 645		RD1/4PU103J
R 646		RS1/8S222J
R 647		RS1/8S222J
R 648		RD1/4PU222J
R 649		RS1/10S222J
R 650		RD1/4PU222J
R 651		RD1/4PU222J
R 652		RD1/4PU222J
R 653		RS1/10S222J
R 654		RS1/10S473J
R 655		RS1/10S473J
R 656		RS1/10S473J
R 657		RS1/10S473J
R 658		RS1/10S103J
R 659		RS1/10S392J
R 660		RS1/10S472J
R 661		RD1/4PU472J
R 662		RS1/10S222J
R 663		RS1/10S222J
R 664		See Contrast table
R 665		RD1/4PU102J
R 667		RS1/10S102J
R 668		RS1/8S0R0J
R 670		RS1/8S0R0J
R 695		RS1/10S472J
R 716		RS1/10S223J
R 717		RS1/10S223J
R 719		RS1/10S473J
R 751		RS1/10S181J
R 752		RS1/10S181J
R 753		RS1/10S223J
R 754		RS1/10S223J
R 755		RS1/10S102J
R 756		RS1/10S102J
R 757		RS1/10S102J
R 758		RS1/10S102J
R 759		RS1/10S473J
R 760		RS1/10S473J
R 761		RS1/10S102J
R 762		RS1/10S101J
R 763		RS1/10S101J
R 764		RS1/10S620J
R 765		RS1/10S223J
R 766		RS1/10S472J
R 767		RS1/10S222J
R 768		RS1/10S0R0J
R 951		RS1/10S473J
R 952		RD1/4PU102J
R 953		RD1/4PU471J
R 954		RD1/4PU101J
R 955		RS1/10S472J
R 956		RS1/10S473J
R 957		RS1/10S102J
R 958		RS1/10S473J
R 959		RS1/10S102J
R 960		RS1/8S103J
R 961		RS1/10S1R0J
R 962		RS1/10S103J
R 963		RS1/10S223J
R 964		RS1/10S152J
R 965		RS1/10S0R0J
R 967		RS1/10S473J
R 968		RS1/10S102J
R 969		See Contrast table
R 970		RD1/4PU152J

CAPACITORS

Circuit Symbol & No.	Part Name	Part No.
C 201		CEJA2R2M50
C 202		CEJA2R2M50
C 203		CEJA1R0M50
C 204		CEJA1R0M50
C 205		CEJA4R7M35
C 206		CEJA4R7M35
C 207		CEJA100M16
C 208		CEJA100M16
C 209		CKSQYB822K50
C 210		CKSQYB822K50
C 211		CEJA1R0M50
C 212		CEJA1R0M50
C 213		CKSQYB183K25
C 214		CKSQYB183K25
C 215		CKSQYB102K50
C 216		CKSQYB102K50
C 217		CEJA2R2M50
C 218		CEJA2R2M50
C 219		CKSQYB333K25
C 220		CKSQYB333K25
C 221		CEJA220M10
C 222		CEJA220M10
C 223		CKSQYF104Z25
C 225		See Contrast table
C 227		CEJA2R2M50
C 228		CEJA2R2M50
C 229		CEJA2R2M50
C 230		CEJA2R2M50
C 236		See Contrast table
C 309	3300µF/16V	CCH1018
C 310		CKSQYB104K16
C 311		CKSYB224K16
C 312		CKSQYB224K16
C 313		CKSQYB224K16
C 314		CKSQYB224K16
C 315		CEJA100M16
C 316		CKSQYB224K16
C 317		CEJA1R0M50
C 318		CEJA330M10
C 401		CKSQYB223K25

Circuit Symbol & No.		Part Name	Part No.
C	402		CKSYB273K25
C	406		CCSQSL101J50
C	407		CKSQYB102K50
C	408		CEJA220M16
C	409		CKSQYB103K25
C	410		CEJA220M6R3
C	411		CEJA220M16
C	412		CKSQYB103K25
C	413		CKSQYB103K25
C	414	4.7µF/16V	CCH1250
C	415		CKSQYB103K25
C	416		CKLSR473K16
C	417		CKSYB332K50
C	418		CKSQYB103K25
C	419		See Contrast table
C	420		CKSQYB103K25
C	421		CKSQYB103K25
C	422		CEJA220M6R3
C	423		CKSQYB102K50
C	424	4.7µF/16V	CCH1250
C	425		CKSQYB103K25
C	427		CKSYB103K50
C	428		CKSQYB103K25
C	429		CCSQCH150J50
C	430		CCSQCH150J50
C	431		CCSQSL101J50
C	432		CKSQYB103K25
C	439		CKSQYB473K16
C	440		CKSQYB473K16
C	442		CKSQYB102K50
C	601		See Contrast table
C	602		See Contrast table
C	603		See Contrast table
C	604		See Contrast table
C	605		See Contrast table
C	606		CEJA100M16
C	612		CEAL2R2M50
C	613		CKSYB102K50
C	614		CCSQSL101J50
C	615		CEJA4R7M35
C	616		CKSQYB103K25
C	618		CKSQYB223K25
C	622		CEJA220M10
C	624		CKSQYB102K50
C	751		CEJA1R0M50
C	752		CEJA1R0M50
C	753		CEJA1R0M50
C	754		CEJA1R0M50
C	755		CEJA100M16
C	756		CEJA100M16
C	757		CKSQYB102K50
C	758		CKSQYB104K16
C	951	470µF/16V	CCH1183
C	952		CEJA470M10
C	953		CEAS101M10
C	954		CKSQYB103K25
C	956		CKSQYB103K25
C	957		CKSQYB103K25
C	958		CEAS101M10

D Unit Number : CWM5272
Unit Name : Key Board Unit

MISCELLANEOUS

IC	901	IC	PD6195A
D	901	Chip Diode	MA151WK
D	902	Diode	MA151WA
D	903	LED	QLMP-6577
L	901	Ferri-Inductor	LAU101K

Circuit Symbol & No.		Part Name	Part No.
X	901	Ceramic Resonator 4.97MHz	CSS1312
S	901	Switch	CSG1081
S	902	Switch	CSG1081
S	903	Push Switch	CSG1093
S	904	Push Switch	CSG1093
S	905	Push Switch	CSG1093
S	906	Push Switch	CSG1093
S	907	Push Switch	CSG1093
S	908	Push Switch	CSG1093
S	909	Push Switch	CSG1093
S	910	Push Switch	CSG1093
S	911	Push Switch	CSG1093
S	912	Switch	CSG1081
S	913	Push Switch	CSG1093
S	914	Push Switch	CSG1093
S	915	Switch	CSG1081
S	916	Push Switch	CSG1093
S	917	Switch	CSG1081
S	918	Switch	CSG1081
S	919	Push Switch	CSG1093
S	920	Push Switch	CSG1093
S	921	Push Switch	CSG1093
IL	901	Lamp 14V 40mA	CEL1481
IL	902	Lamp 14V 40mA	CEL1481
IL	903	Lamp 14V 40mA	CEL1507
IL	904	Lamp 14V 40mA	CEL1507
IL	905	Lamp 14V 40mA	CEL1507
LCD	901	LCD	CAW1410

RESISTORS

R	901		RS1/10S222J
R	902		RS1/10S222J
R	903		RS1/10S472J
R	905		RS1/10S470J
R	906		RS1/10S470J
R	908		RS1/10S473J
R	909		RS1/10S473J
R	910		RS1/10S473J
R	911		RS1/10S473J
R	912		RS1/10S473J
R	913		RS1/10S473J
R	914		RS1/10S473J
R	915		RS1/4S821J

CAPACITORS

C	901		CEAL100M16
C	902		CKSQYF104Z25

C Unit Number : EWM1011(P414/X1M/UC)
Unit Number : EWM1010(P4600/X1M/UC,P4650/X1M/ES)
Unit Name : Deck Unit

MISCELLANEOUS

IC	251	IC	HA12192F
IC	351	IC	PA2020A
Q	271	Transistor	2SC4116
Q	351	Transistor	2SB1260
Q	352	Transistor	2SC4102
Q	401	Transistor	DTC114EU
D	351	Diode	1SS355
VR	301	Semi-fixed 33kΩ(B)	CCP1280
VR	302	Semi-fixed 33kΩ(B)	CCP1280

RESISTORS

R	251	(P414/X1M/UC)	RS1/16S333J
R	252	(P414/X1M/UC)	RS1/16S333J
R	253	(P414/X1M/UC)	RS1/16S333J
R	254	(P414/X1M/UC)	RS1/16S333J
R	255		RS1/16S181J

=====Circuit Symbol & No.===Part Name			Part No.
R	256		RS1/16S181J
R	257		RS1/16S183J
R	258		RS1/16S183J
R	259		RS1/16S133J
R	260		RS1/16S133J
R	261		RS1/16S274J
R	262		RS1/16S274J
R	271		RS1/16S183J
R	275		RS1/16S473J
R	276		RS1/16S104J
R	277		RS1/16S224J
R	278		RS1/16S104J
R	281		RS1/8S0R0J
R	282		RS1/8S0R0J
R	283		RS1/8S0R0J
R	284		RS1/8S0R0J
R	285		RS1/16S0R0J
R	286		RS1/16S0R0J
R	287		RS1/16S0R0J
R	288		RS1/8S0R0J
R	289		RS1/8S0R0J
R	290		RS1/8S0R0J
R	301		RS1/16S0R0J
R	321		RS1/8S0R0J
R	351		RS1/16S102J
R	352		RS1/16S102J
R	353		RS1/16S102J
R	354		RS1/16S102J
R	355		RS1/10S274J
R	356		RS1/10S202J
R	357		RS1/10S472J
R	358		RS1/10S103J
R	359		RS1/10S103J
R	360		RS1/10S102J
R	361		RS1/10S622J
R	362		RS1/8S181J
R	373		RS1/8S0R0J
R	374		RS1/8S0R0J
R	375		RS1/8S0R0J
R	401		RS1/16S123J
R	402		RS1/16S332J
R	403		RS1/16S911J
R	404		RS1/16S274J
R	421		RS1/8S0R0J

=====Circuit Symbol & No.===Part Name			Part No.
CAPACITORS			
C	251	(P414/X1M/UC)	CKSRYB331K50
		(P4600/X1M/UC,P4650/X1M/ES)	CKSRYB391K50
C	252	(P414/X1M/UC)	CKSRYB331K50
		(P4600/X1M/UC,P4650/X1M/ES)	CKSRYB391K50
C	253	(P414/X1M/UC)	CKSRYB331K50
		(P4600/X1M/UC,P4650/X1M/ES)	CKSRYB391K50
C	254	(P414/X1M/UC)	CKSRYB331K50
		(P4600/X1M/UC,P4650/X1M/ES)	CKSRYB391K50
C	255		CKSRYB103K50
C	256		CKSRYB103K50
C	271		CEJA1R0M50
C	272		CKSQYB104K16
C	301		CKSYB474K16
C	302		CKSYB474K16
C	303		CKSQYB104K16
C	304		CKSQYB104K16
C	351		CKSYB224K25
C	352		CKSQYB392K50
C	353		CKSQYB103K50
C	354		CKSQYB473K50
C	355		CKSYB104K50
C	356		CKSQYB103K50
C	401		CKSRYB472K50
C	402		CEJA1R0M50
C	403		CKSRYB223K25
C	404		CKSRYB103K50
C	405		CKSRYB333K16

E Unit Number :
Unit Name : PCB Unit

S	1	Switch (Load)	ESG1004
S	2	Switch (70μS)	ESG1004
EGN	1	Photo-Interrupter	EGN1005

F Unit Number :
Unit Name : Reel PCB

EGN	2	Photo-Interrupter	EGN1006
EGN	3	Photo-Interrupter	EGN1006

Miscellaneous Parts List

M	1	Motor Unit (Main)	EXA1491
M	2	Motor Unit (Sub)	EXA1485
HD	1	Head Assy(P414/X1M/UC)	EXA1508
HD	1	Head Assy (P4600/X1M/UC,P4650/X1M/ES)	EXA1506

CONTRAST TABLE of TUNER AMP UNIT

KEH-P414/X1M/UC,KEH-P4600/X1M/UC and KEH-P4650/X1M/ES have the same construction except for the following:

Symbol & Description		Part No. KEH-P414/X1M/UC	Part No. KEH-P4600/X1M/UC	Part No. KEH-P4650/X1M/ES
Tuner Amp Unit		CWM5263	CWM5264	CWM5265
IC 602,603	IC	TPD1018F	Not used	Not used
Q 604	Transistor	2SA933S	Not used	Not used
Q 605	Transistor	DTC124EK	Not used	Not used
Q 606	Transistor	2SC1740S	Not used	Not used
Q 607,608	Transistor	2SC2412K	Not used	Not used
D 610 — 613	Diode	1SR139-400	Not used	Not used
D 614	Diode	BR4361F	Not used	Not used
R 217,612		RS1/10S103J	Not used	Not used
R 218		RS1/10S102J	Not used	Not used
R 406		Not used	Not used	RD1/4PU182J
R 407		RS1/10S0R0J	RS1/10S0R0J	Not used
R 611		RS1/10S751J	Not used	Not used
R 613,614,615,621		RS1/10S223J	Not used	Not used
R 616,620		RS1/10S272J	Not used	Not used
R 617,622,623,626		RS1/10S473J	Not used	Not used
R 618,619,664		RD1/4PU102J	Not used	Not used
R 624		RS1/10S124J	Not used	Not used
R 625		RS1/10S123J	Not used	Not used
R 627		RD1/4PU103	Not used	Not used
R 628		RD1/4PU103J	Not used	Not used
R 634		Not used	RD1/4PU473J	RD1/4PU153J
R 635		RS1/10S473J	RS1/10S153J	RS1/10S473J
R 969		RS1/8S0R0J	Not used	Not used
C 225,236		CKSQYB473K16	Not used	Not used
C 419		Not used	Not used	CKSQYB103K25
C 601 — 605		CKSQYB103K25	Not used	Not used
FM/AM Tuner Unit		CWE1417	CWE1417	CWE1485

6. ADJUSTMENT

● Connection Diagram

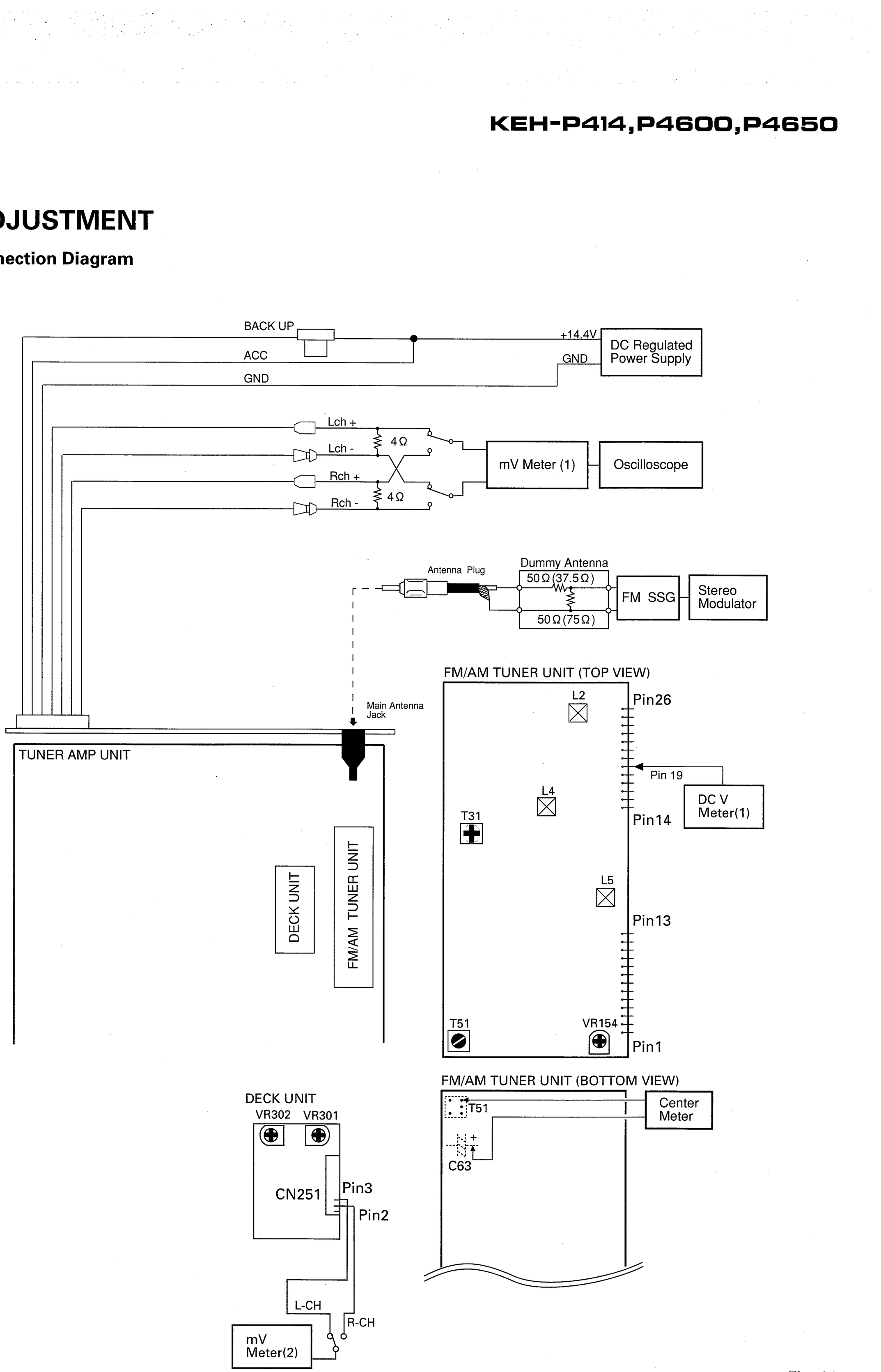


Fig. 21

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.) or 400Hz 100%(75kHz Dev.)
S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

FM ADJUSTMENT(UC MODEL)

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	107.9	L5	DC V Meter(1) : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

FM ADJUSTMENT(ES MODEL)

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

DOLBY B NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz,200nwb/m)	VR301(Lch),VR302(Rch)	mV Meter(2) : –8.24dBs±1.0dB (DOLBY NR Switch : OFF)

● **For Repair of the Detach Grille Assy, Use the Extension-Cord Tool GGD1056.**

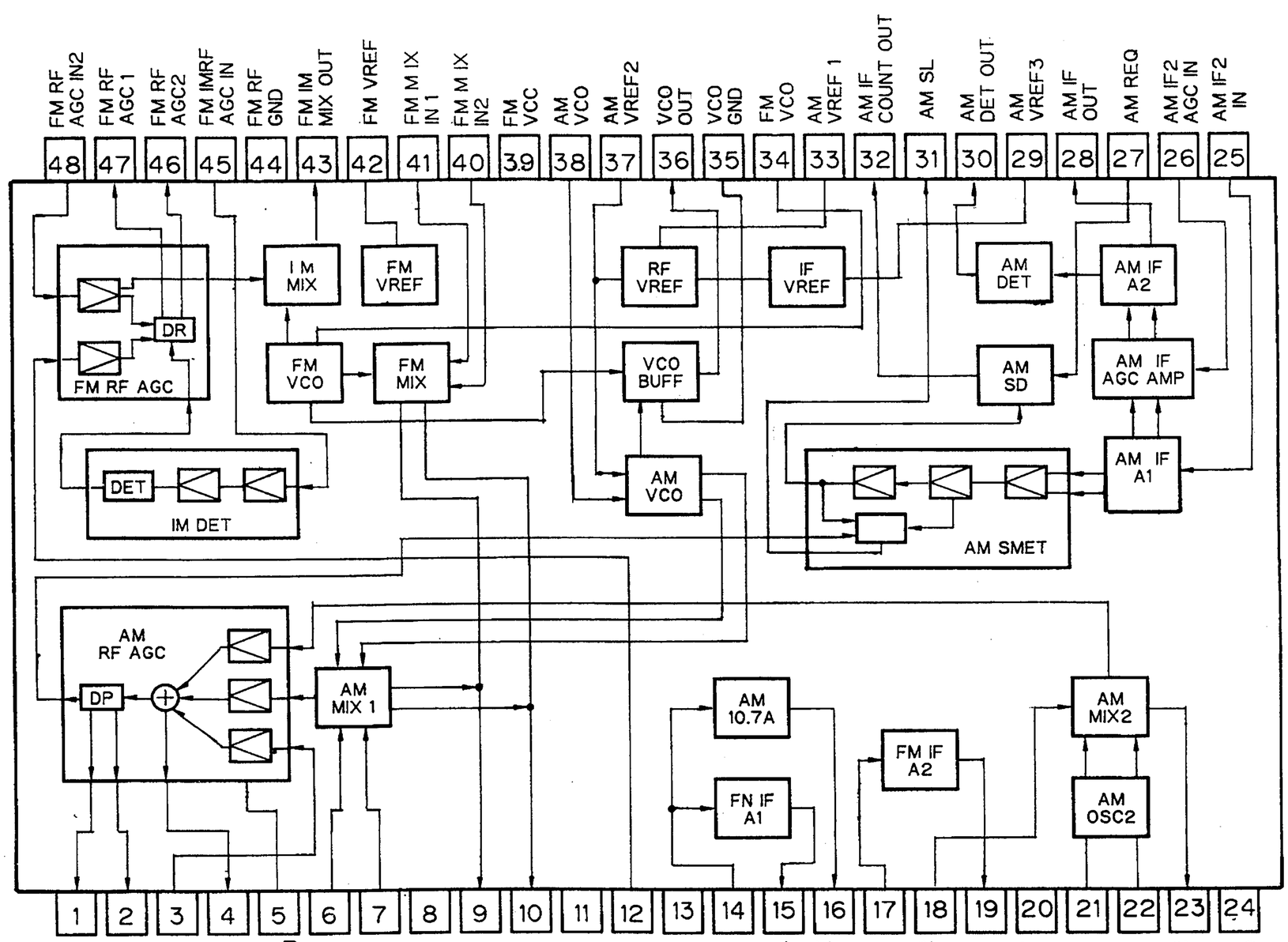
● **For Repair of the Cassette Mechanism Module, Use the Extension-Cord Tool GGD1121.**

7. GENERAL INFORMATION

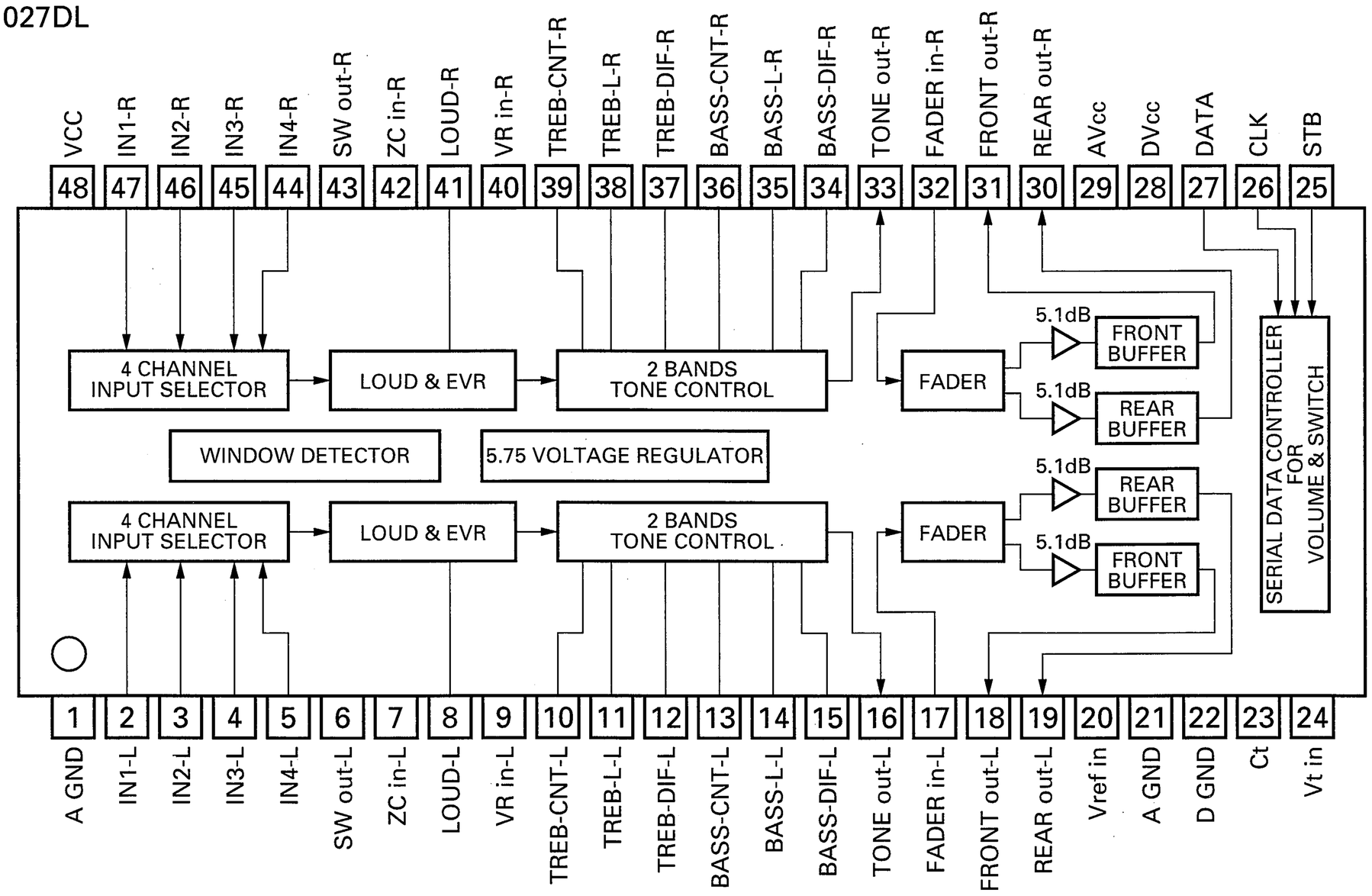
7.1 PARTS

7.1.1 IC

PA4023B

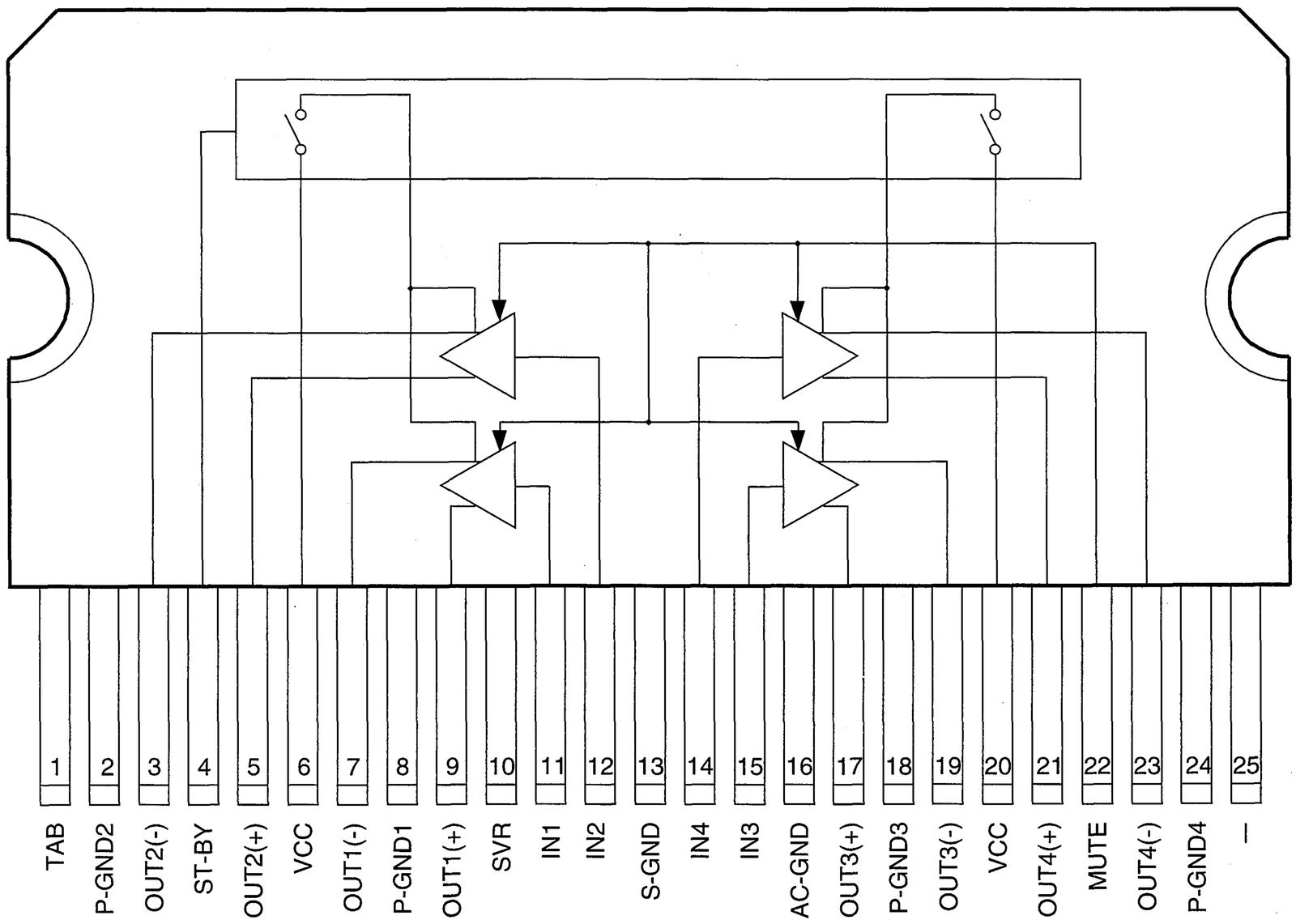


*SN761027DL

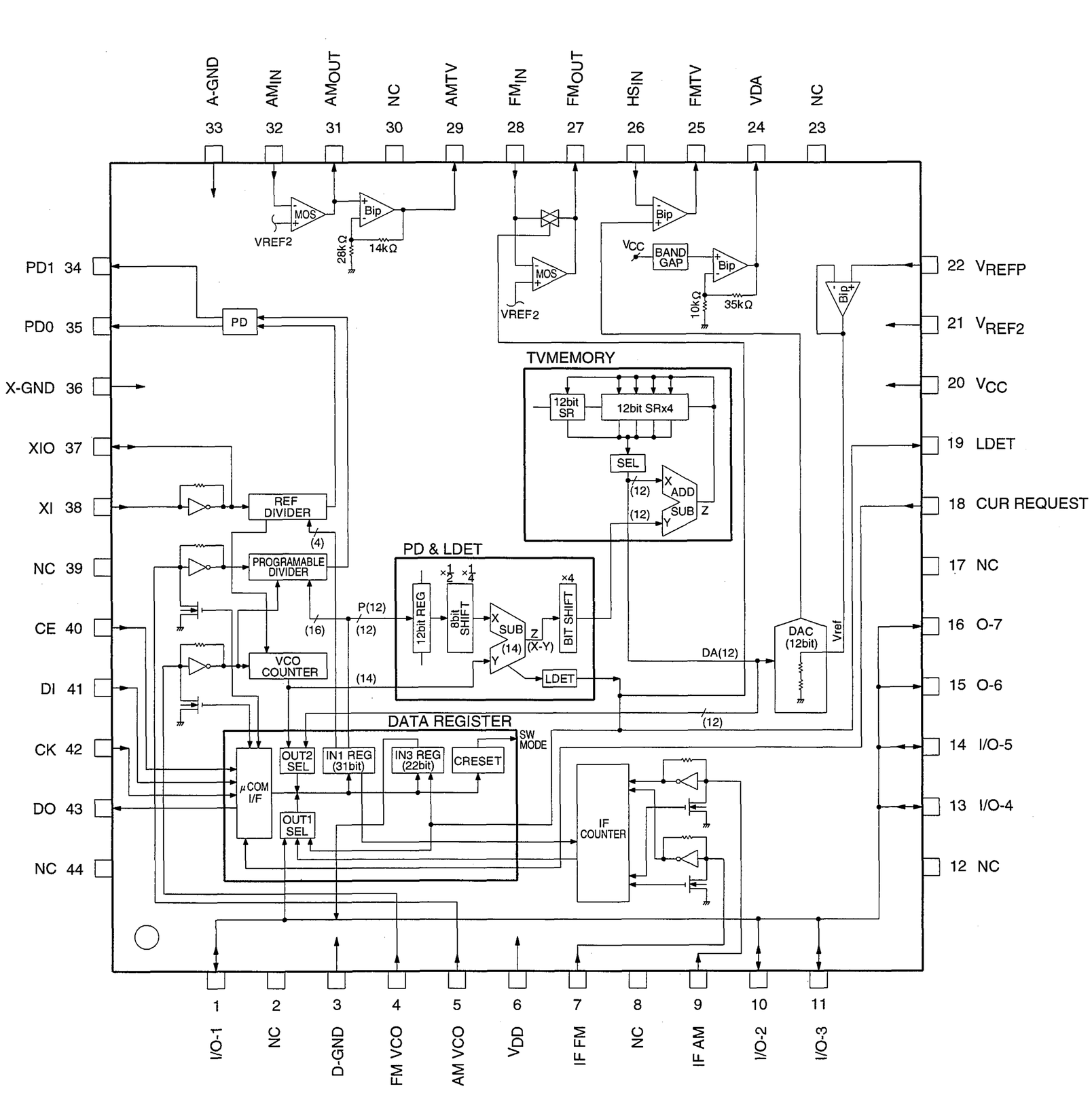

VCC IN1-R IN2-R IN3-R IN4-R SW out-R ZC in-R LOUD-R VR in-R TREB-CNT-R TREB-L-R TREB-DIF-R BASS-CNT-R BASS-L-R BASS-DIF-R TONE out-R FADER in-R FRONT out-R REAR out-R AVcc DVcc DATA CLK STB
48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25
4 CHANNEL INPUT SELECTOR
LOUD & EVR
2 BANDS TONE CONTROL
FADER
5.1dB
FRONT BUFFER
REAR BUFFER
WINDOW DETECTOR
5.75 VOLTAGE REGULATOR
SERIAL DATA CONTROLLER FOR VOLUME & SWITCH
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A GND IN1-L IN2-L IN3-L IN4-L SW out-L ZC in-L LOUD-L VR in-L TREB-CNT-L TREB-L-L TREB-DIF-L BASS-CNT-L BASS-L-L BASS-DIF-L TONE out-L FADER in-L FRONT out-L REAR out-L Vref in A GND D GND Ct Vt in

IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

TDA7384A



PM2005B

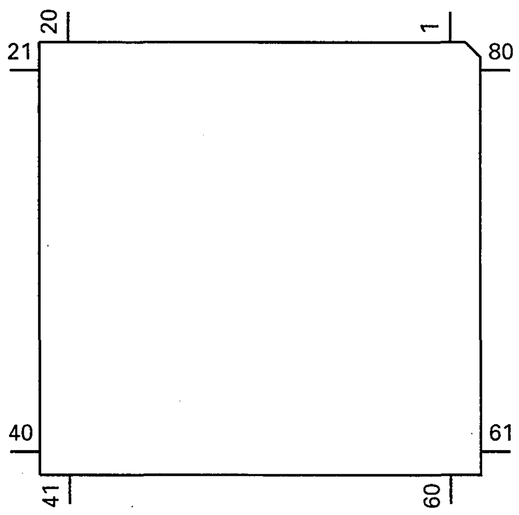


● Pin Functions (PD4748A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	ASENB0	O	C	ASENB output
2	NC			Not used
3	ADPW	O	C	Control output for analog input reference power
4	AVSS			A/D GND
5	FIEOUT	O	C	LPF switch
6	$\overline{ST}$	I		FM stereo input
7	AVREF1			(D/A converter standard voltage)
8	KYDT	I		Key data input
9	DPDT	O	C	Key data output
10	$\overline{SWVDD}$	O	C	Grille power supply control output
11	TUNPD1	I		PLL IC data input
12	TUNPD0	O	C	PLL IC data output
13	TUNPCK	O	C	PLL IC clock
14	TUNPCE	O	C	PLL IC chip enable
15,16	NC			Not used
17	TX	O	C	IP BUS data output
18,19	NC			Not used
20	DRELAY	O	C	External relay output
21	NC			Not used
22	VST	O	C	Strobe pulse output for electronic volume
23	VCK	O	C	Clock output for electronic volume
24	VDT	O	C	Data output for electronic volume
25	STCUT	O	C	Starter cut off output
26	DRSYS	O	C	Door system select output
27	DRSENS	I		Door open/close sense input
28	ILPW	O	C	Illumination power
29	FM	O	C	FM power control output
30	AM	O	C	AM power control output
31	NR	O	C	Cassette mechanism noise reduction output
32	CM	O	C	Cassette mechanism capstan motor control output
33	VSS			GND
34	SC2	O	C	Cassette mechanism sub motor control output
35	SC1	O	C	Cassette mechanism sub motor control output
36	MSIN	I		Cassette mechanism MS sense input
37	$\overline{DRLOCK}$	I		Door lcock
38	$\overline{MTL}$	I		Cassette mechanism tape select input
39	$\overline{DLED}$	O	N	Alarm LED output
40	$\overline{N}$/R	O	C	Normal reverse input
41	PLAY	O	C	MS gain select output
42	$\overline{LOADSW}$	I		Tape loading input
43	POS	I		Cassette mechanism position sense input
44	RES	I		Cassette mechanism reverse end sense input
45	PEE	O	C	Beep tone output
46	NES	I		Cassette mechanism forward end sense input
47	NC			Not used
48	STBY	O	C	Stand-by output terminal
49-52	NC			Not used
53	SD	I		SD input
54	$\overline{MUTE}$	O	C	System mute output
55	SYSPW	O	C	System power supply control output
56-59	NC			Not used
60	$\overline{RESET}$	I		Reset input
61	RX	I		IP BUS input
62	NC			Not used
63	$\overline{DSENS}$	I		Grille detach sense
64	MOSENS	I		Motion input
65	$\overline{ASENS}$	I		ACC power sense input

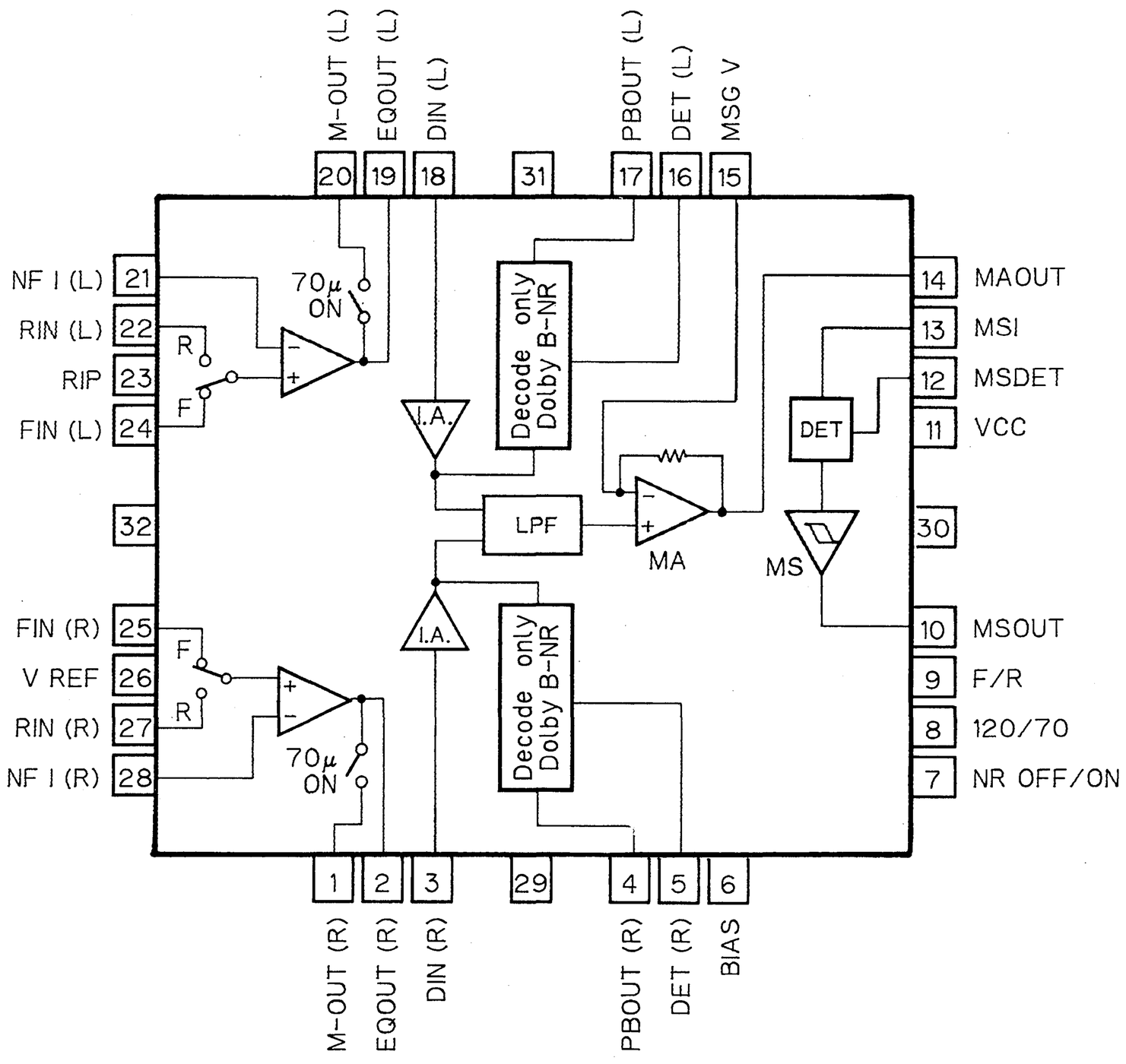
Pin No.	Pin Name	I/O	Format	Function and Operation
66	$\overline{\text{BSENS}}$	I		Back up power sense input
67	CLKIN	I		Clock input
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	NC			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		SD level input from tuner
77	MODEL0	I		Model select input
78	MODEL1	I		Model select input
79	TELIN	I		TEL mute signal input
80	NC			Not used

*PD4748A



Format	Meaning
C	C MOS
N	N channel open drain

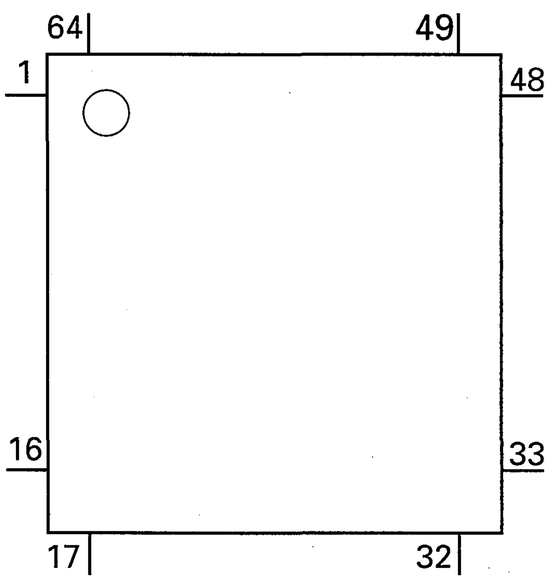
HA12192F



● Pin Functions (PD6195A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1–5	SEG4-0	O		LCD segment output
6–9	COM3-0	O		LCD Common driver output
10	LCDB			LCD bias power supply
11–14	KS4-1	O	N	Key strobe output
15,16	KD0-1	I		Key data input
17	REM	I		Remote control reception
18	DPDT	I		UART input
19	RST	I		System reset
20	SO	O	C	UART output
21	KYDT			(VSS)
22	X0			Crystal oscillator connection pin
23	X1			Crystal oscillator connection pin
24	VSS			GND
25,26	KD2-3	I		Key data input
27,28	KS5-4	O	N	Key strobe output
29–55	SEG39-13	O		LCD segment output
56	VDD			Power
57–64	SEG12-5	O		LCD segment output

*PD6195A



Format	Meaning
C	C MOS
N	N channel open drain

7.1.2 DISPLAY

● **CAW1410**

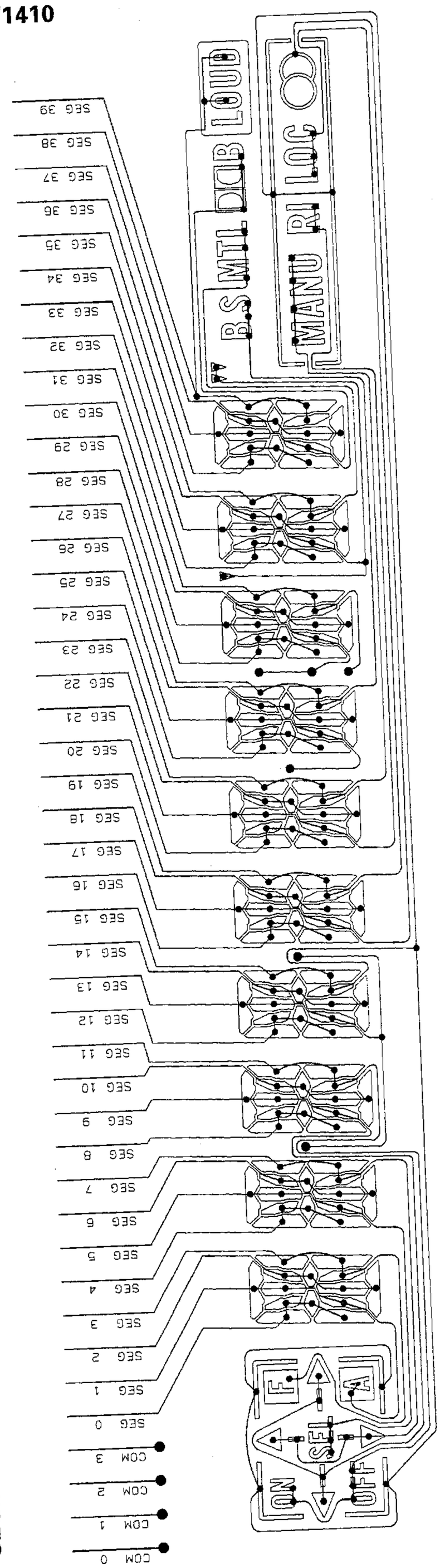


Fig. 22

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

1. Detach Grille Assy

1. A×3

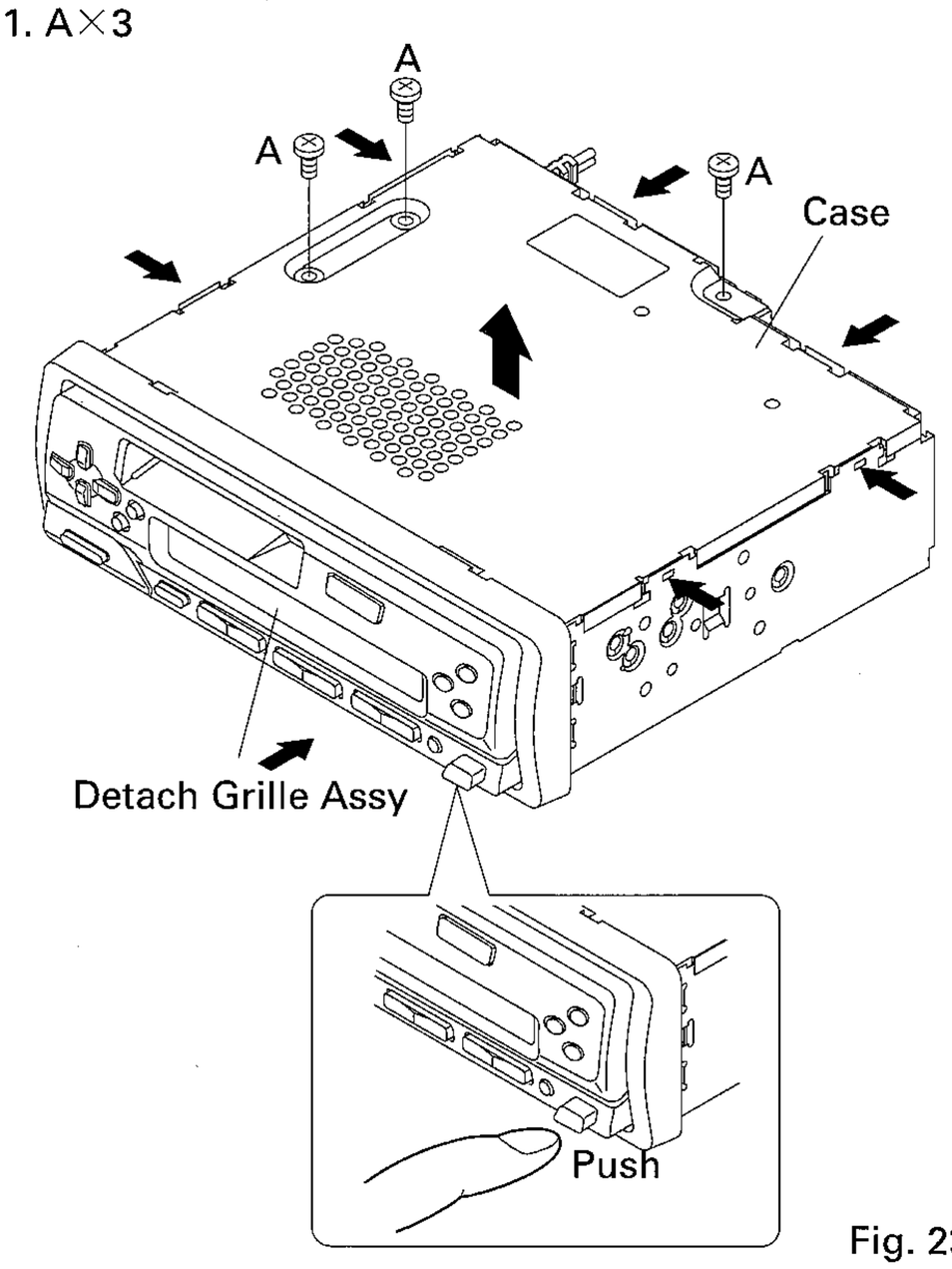


Fig. 23

2. Panel Unit

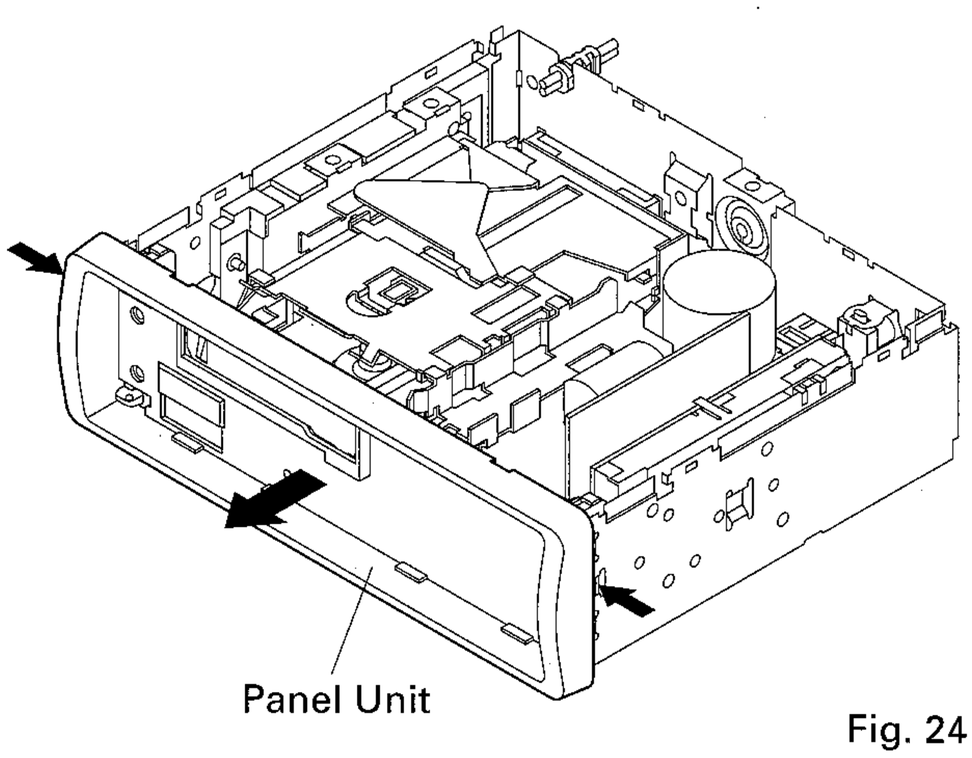


Fig. 24

3. Cassette Mechanism Module

1. A×4

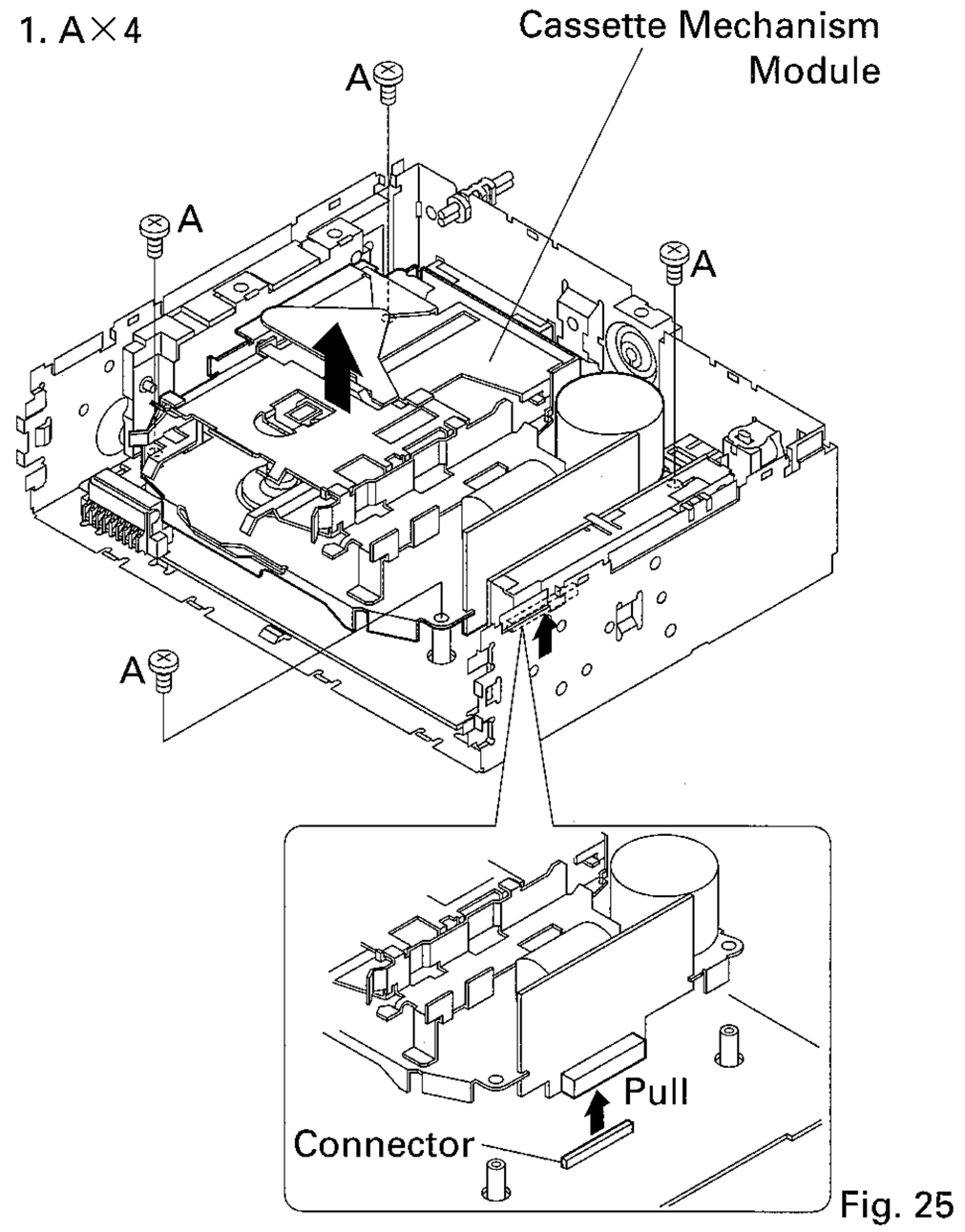


Fig. 25

4. Tuner Amp Unit

1. A×5
2. B×2

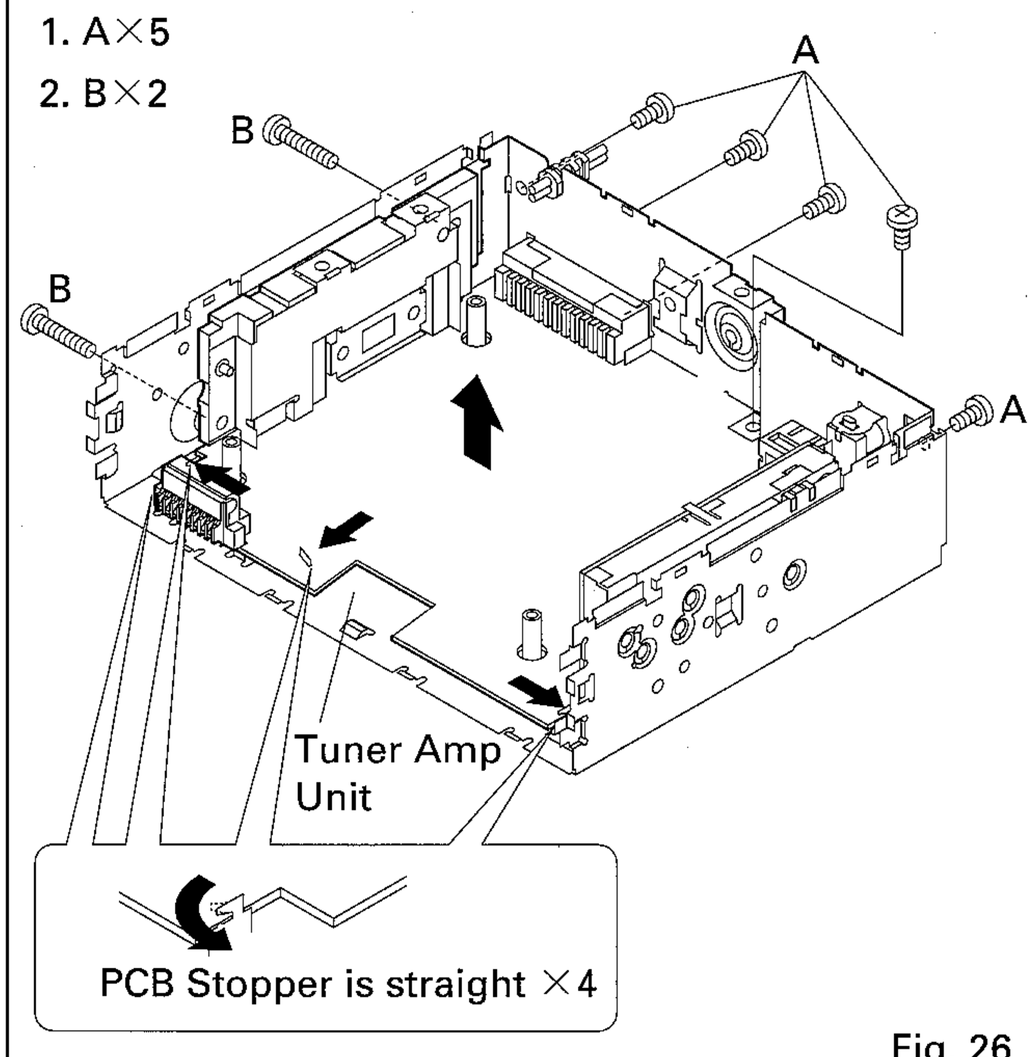


Fig. 26

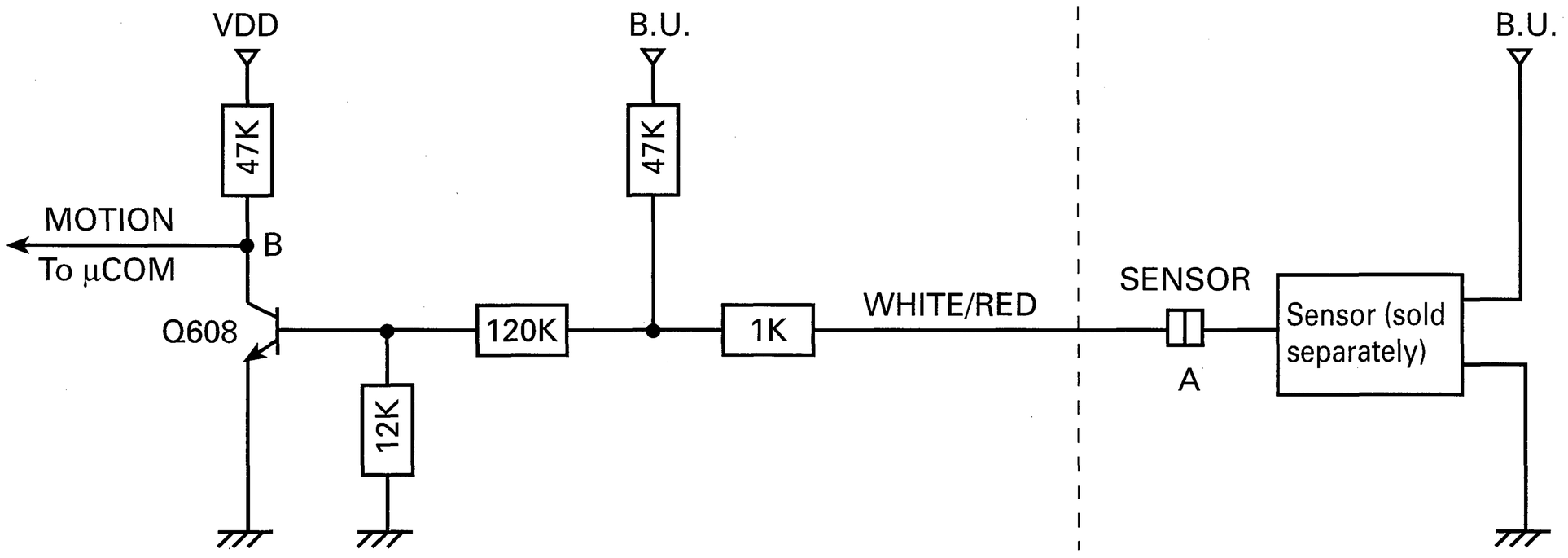
7.3 EXPLANATION

7.3.1 CIRCUIT DESCRIPTIONS

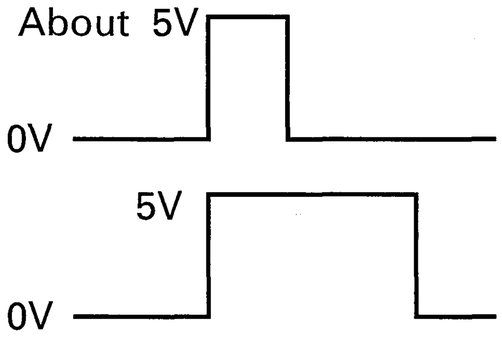
● KEH-P414/X1M/UC

1) SENSOR

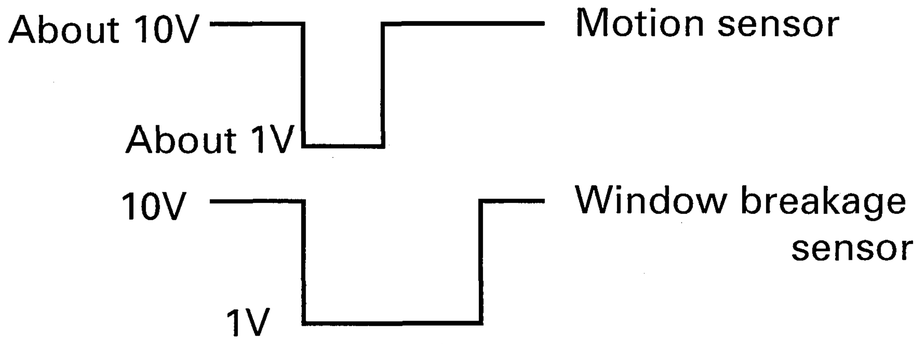
Install sensors sold separately, such as a motion sensor and window breakage sensor.



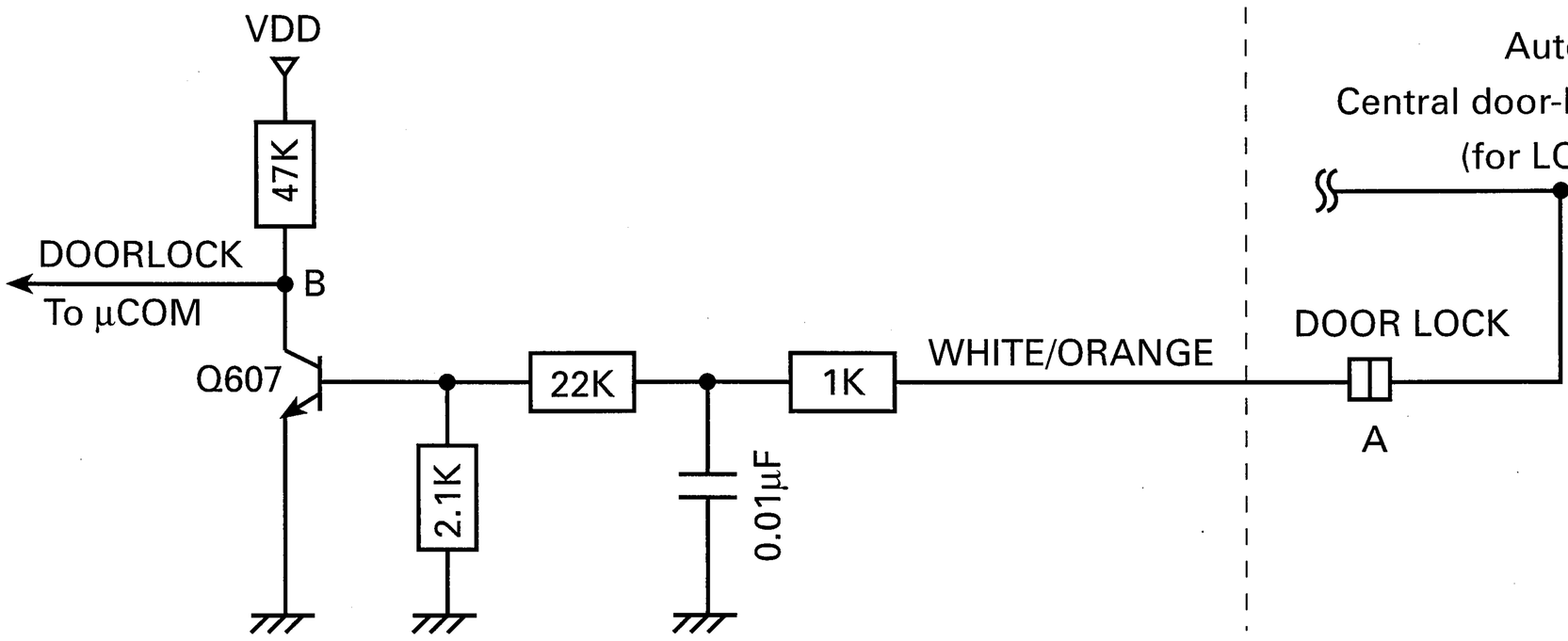
Point-B waveform (when a motion is sensed)



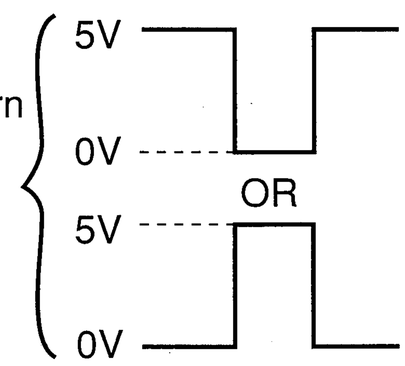
Point A waveform (when a motion is sensed)



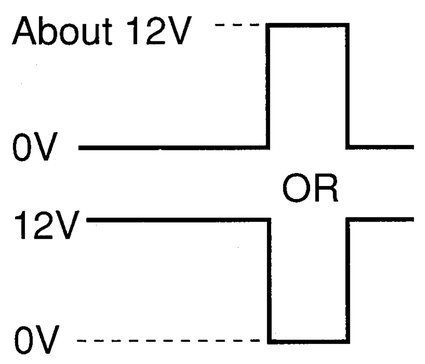
2) DOOR LOCK



The signal pattern depends on the Alarm setting.

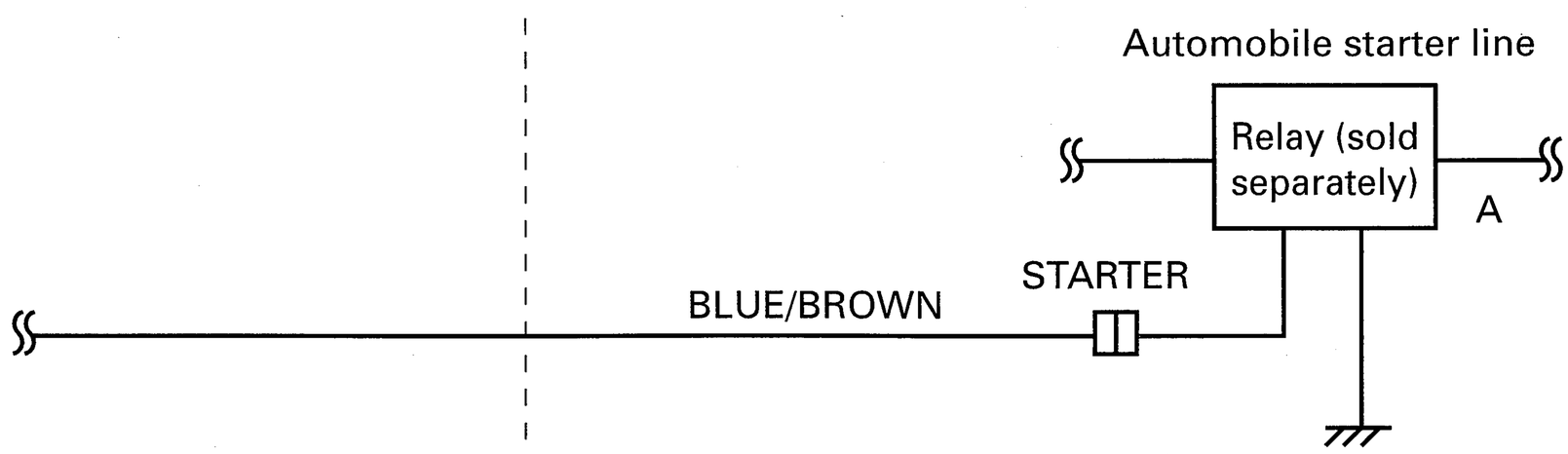


Point-A waveform
(when the door is locked or open)

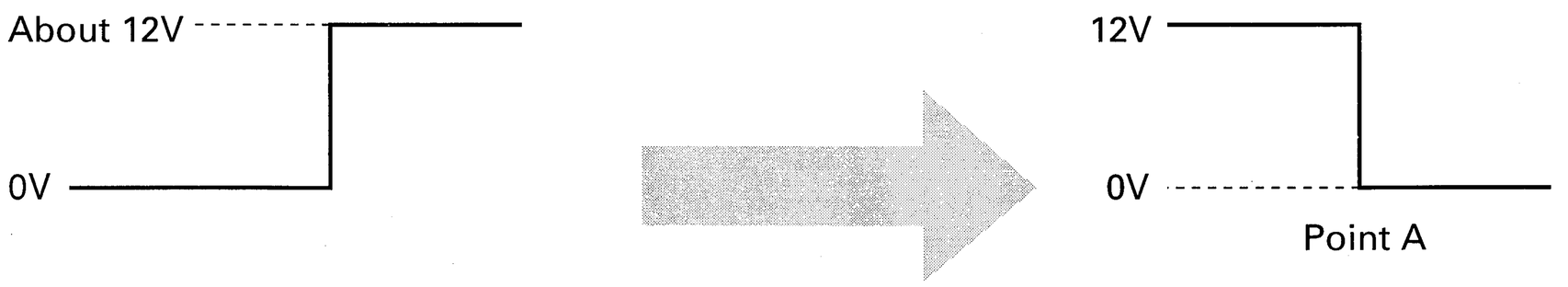


Depending on car models.

3) STARTER



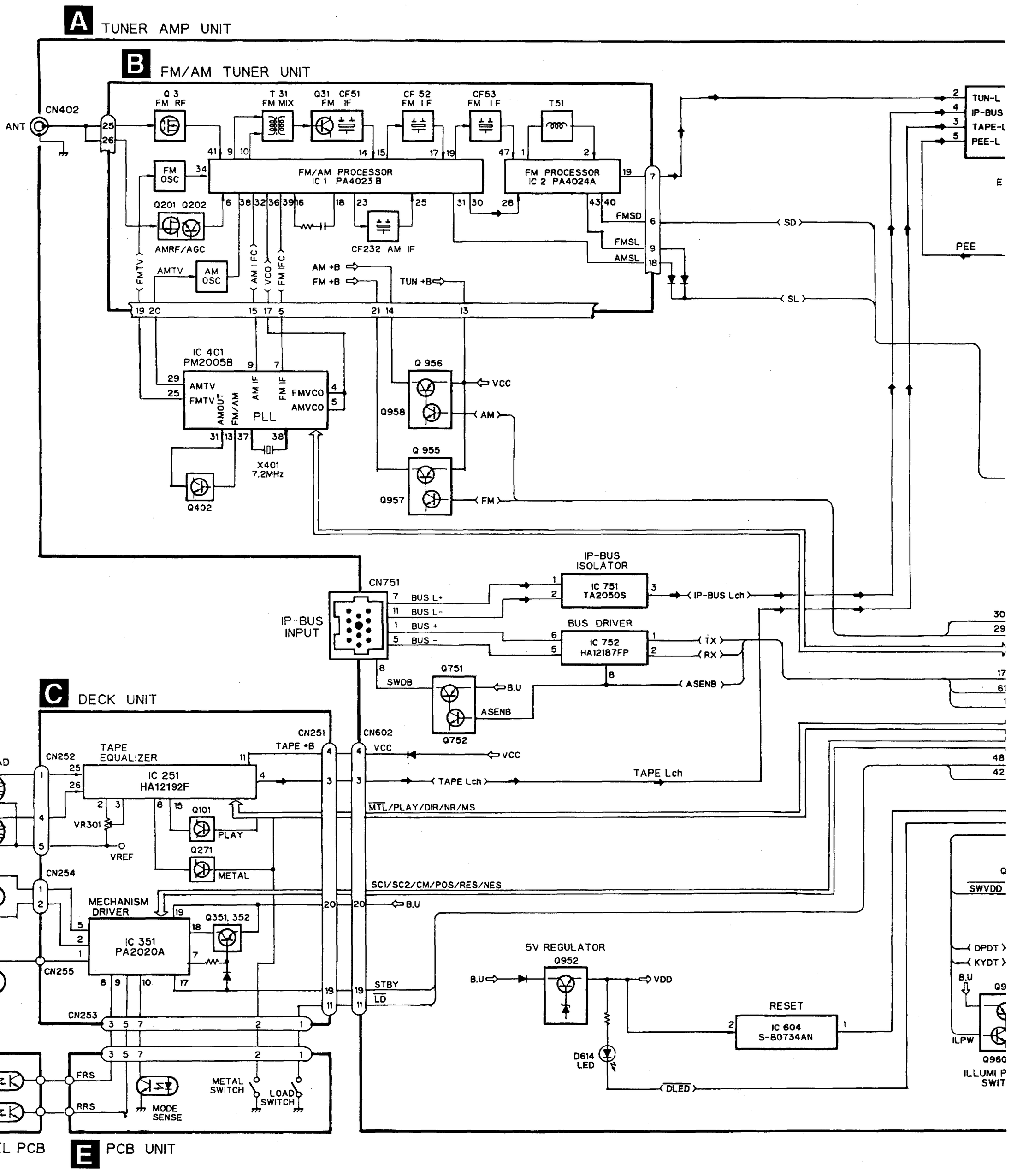
When the door is open forcibly or the window is broken.



The power supply for the starter is cut out.

7.3.2 BLOCK DIAGRAM

● KEH-P414/X1M/UC



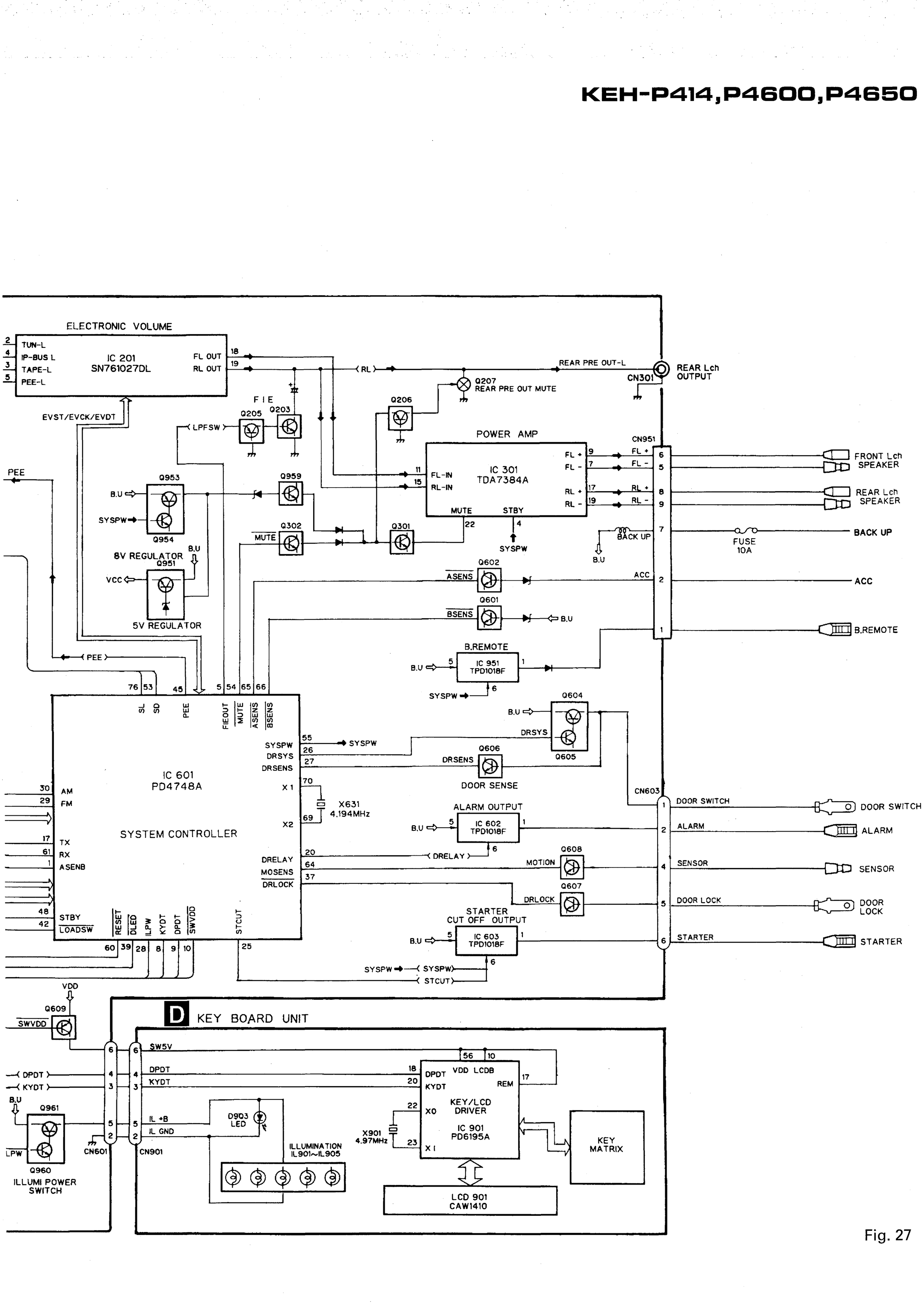

ELECTRONIC VOLUME
IC 201
SN761027DL
TUN-L
IP-BUS L
TAPE-L
PEE-L
FL OUT
RL OUT
EVST/EVCK/EVDT
F I E
Q205
Q203
LPFSW
Q206
Q207
REAR PRE OUT MUTE
REAR PRE OUT-L
CN301
REAR Lch OUTPUT
POWER AMP
IC 301
TDA7384A
FL-IN
RL-IN
MUTE
STBY
FL +
FL -
RL +
RL -
CN951
FRONT Lch SPEAKER
REAR Lch SPEAKER
BACK UP
FUSE 10A
PEE
Q953
Q954
B.U
SYSPW
Q959
Q302
MUTE
Q301
8V REGULATOR
Q951
VCC
5V REGULATOR
Q602
ASENS
ACC
Q601
BSENS
B.REMOTE
IC 951
TPD1018F
Q604
DRSYS
Q605
Q606
DRSENS
DOOR SENSE
IC 601
PD4748A
SYSTEM CONTROLLER
X631
4.194MHz
ALARM OUTPUT
IC 602
TPD1018F
DRELAY
Q608
MOTION
Q607
DRLOCK
STARTER CUT OFF OUTPUT
IC 603
TPD1018F
CN603
DOOR SWITCH
ALARM
SENSOR
DOOR LOCK
STARTER
Q609
SWVDD
VDD
D KEY BOARD UNIT
CN601
CN901
Q961
Q960
ILLUMI POWER SWITCH
D903 LED
ILLUMINATION IL901~IL905
X901
4.97MHz
IC 901
PD6195A
KEY/LCD DRIVER
VDD LCDB
REM
KEY MATRIX
LCD 901
CAW1410

Fig. 27

8. OPERATIONS AND SPECIFICATIONS

Connection Diagram

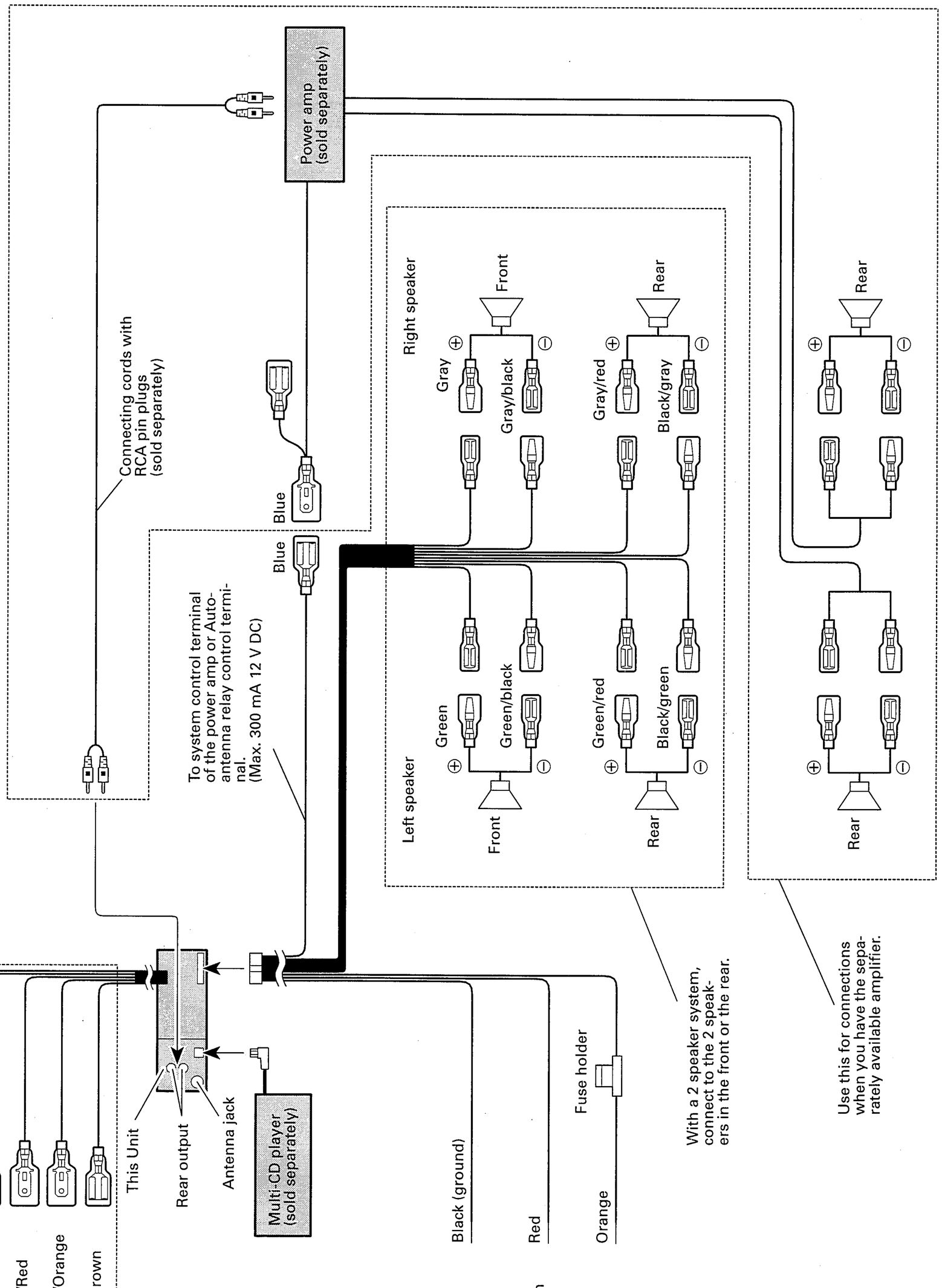
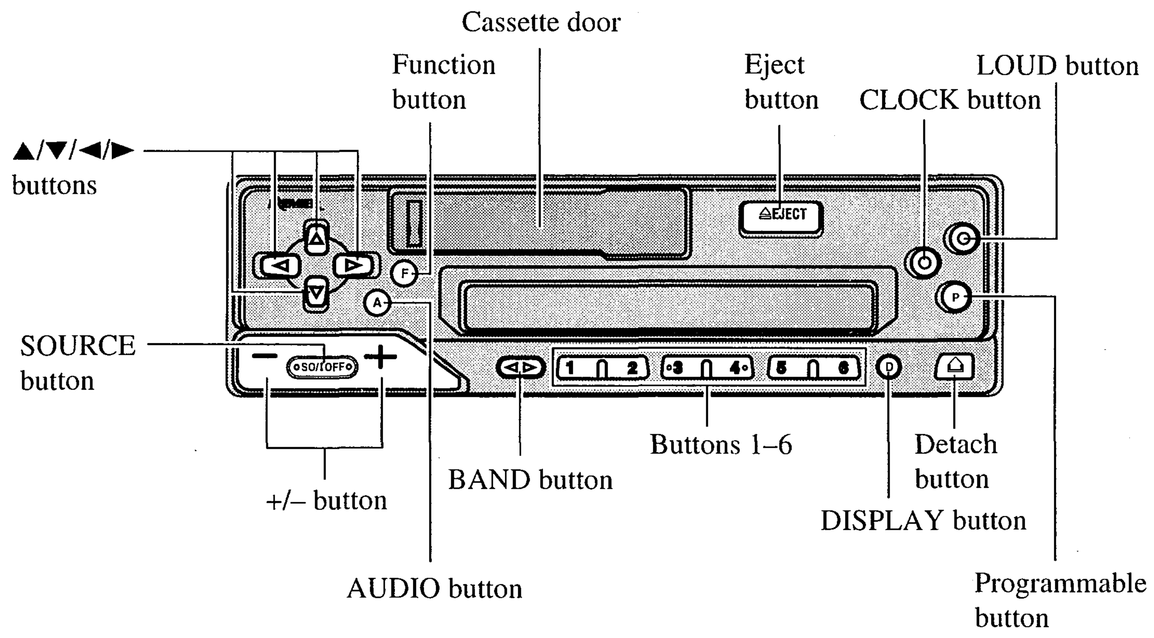


Fig. 28

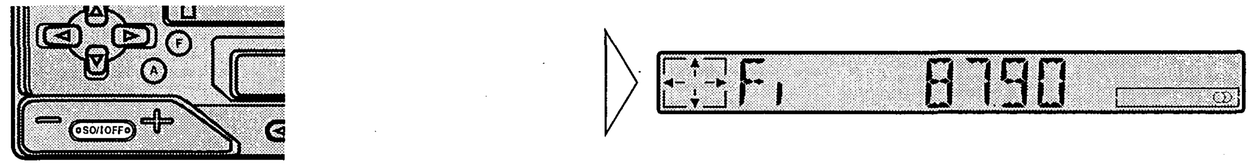
Key Finder



Basic Operation

Switching Power ON/OFF

- **Select the desired source (such as the tuner).**



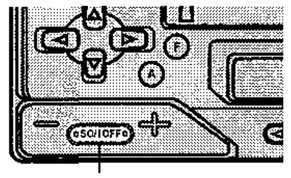
Each press of the SOURCE button selects the desired source in the following order:
CD player (one disc only) → Tuner → Tape → Multi-CD player → AUX

To switch the sources OFF, hold down the SOURCE button for 1 second or more.

Note:
- In the following cases, the sound source will not change:
  * No Multi-CD player is connected to this unit.
  * No cassette tape is set in this unit.
  * No magazine is set in the Multi-CD player.
  * No disc is set in the CD player.
  * AUX (external input) is set to OFF.

Basic Operation of Tuner

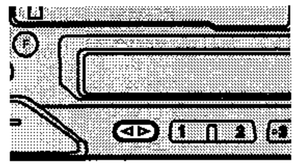
1. **Select Tuner. (See page 51.)**

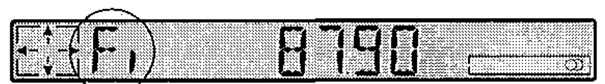


Each press
changes the Source ...

Frequency appears on the display.
("◯" indicator lights when a stereo station is selected.)

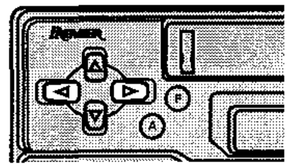
2. **Select the desired band.**





FI → FII → FIII → AM

3. **Tune the receiver to a higher or lower frequency.**

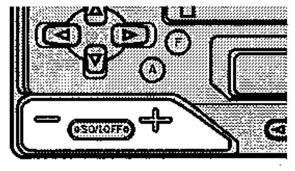


This product's tuner lets you select the tuning by changing the length of the time you press the button.

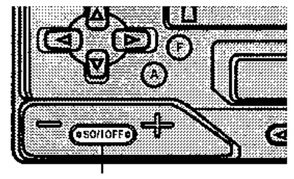
Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning	0.3 – 2 seconds
Manual Tuning (continuously)	2 seconds or more

Note:
- To select a weak broadcasting station that cannot be tuned in with the Seek Tuning function, tune in with Manual Tuning.

4. **Raise or lower the volume.**



5. **Turn the source OFF. (See page 51.)**

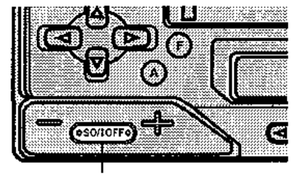


Hold for 1 second

Entering the Function Menu

In this menu you can select tuner functions.

- **Select the desired mode in Function Menu.**



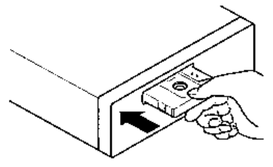
Each press
changes the Mode ...

Each press of the Function button selects the mode in the following order:
BSM → LOCAL

Note:
- You can cancel the Function Menu by pressing the BAND button.
- After selecting the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Basic Operation of Cassette Player

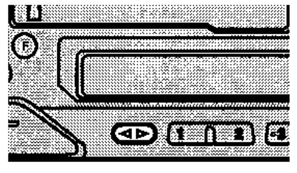
1. Insert the cassette tape.

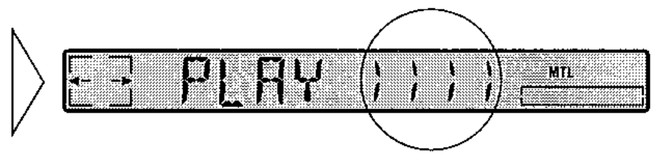


"MTL"

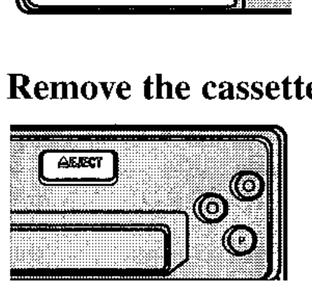
"MTL" appears on the display automatically when a metal or chrome tape is inserted. Nothing is displayed for a normal tape.

2. Switch tape playback from side A to side B, or vice versa.

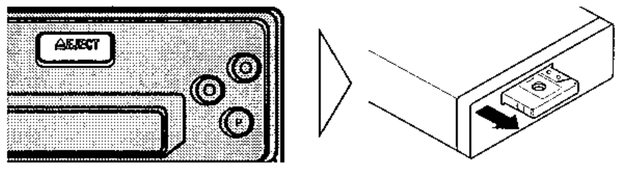




3. Raise or lower the volume.



4. Remove the cassette tape.



Note:

- The Tape function can be turned ON/OFF with the cassette tape remaining in this product. (See page 51.)

Fast Forward/Rewind and Music Search

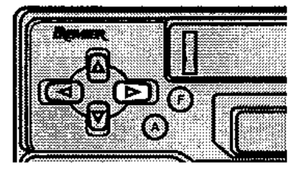
■ Fast Forward and Forward-Music Search

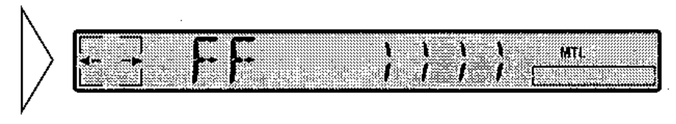
While "FF" is displayed, the system fast-forwards the cassette tape to the end of the current side.

While "F-MS" is displayed, the system winds the cassette tape forward to the beginning of the next song, then play begins from that point.

- **Select the desired mode in the following order:**

FF → F-MS → Normal playback





Note:

- Fast Forward (FF) and Forward-Music Search (F-MS) can be canceled by pressing the BAND button during FF or F-MS operation.

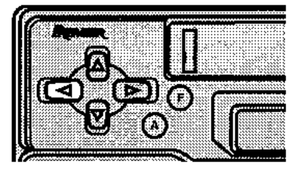
■ Rewind and Rewind-Music Search

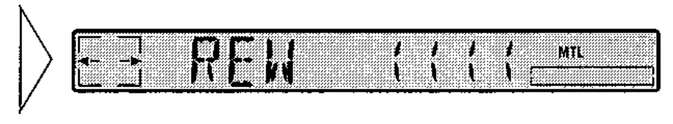
While "REW" is displayed, the system rewinds the cassette tape to the beginning of the current side.

While "R-MS" is displayed, the system rewinds the cassette tape to the beginning of the current song, then play begins from that point.

- **Select the desired mode in the following order:**

REW → R-MS → Normal playback





Note:

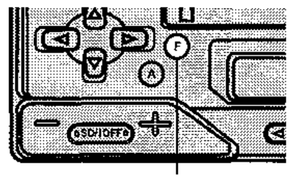
- Rewind (REW) and Rewind-Music Search (R-MS) can be canceled by pressing the BAND button during the REW or R-MS operation.

Using the Cassette Player

Entering the Function Menu

In this menu you can select Tape functions.

- **Select the desired mode in Function Menu.**



Each press
changes the Mode ...

Each press of the Function button selects the mode in the following order:
REPEAT → B SKIP → RI → B NR

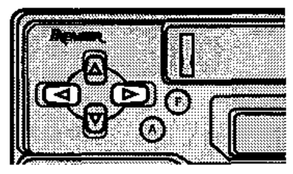
Note:
- You can cancel the Function Menu by pressing the BAND button.
- After selecting the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

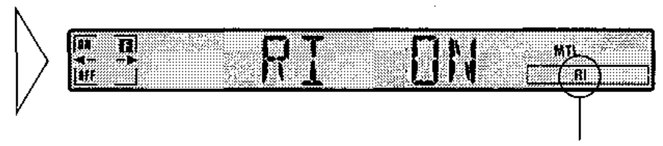
Radio Intercept

This function allows you to listen to the radio during tape fast-forwarding/rewinding.

Note:
- The radio intercept function does not work during a Music Search operation.

1. **Select the Radio Intercept mode in the Function Menu.**
2. **Switch the Radio Intercept mode ON or OFF.**





"RI"

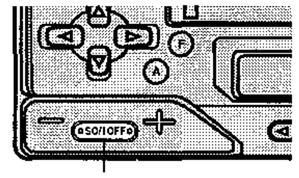
Note:
- Pressing the BAND button cancels the Function Menu.

Using Multi-CD Players

This product can control one or more multi-CD players.

Basic Operation of Multi-CD Players

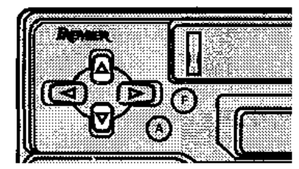
1. **Select the multi-CD player source. (See page 51.)**



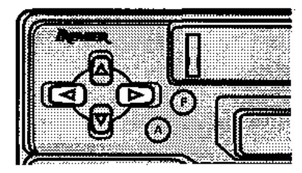
Each press
changes the Source ...

Note:
- The multi-CD player may perform a preparatory operation, such as verifying the presence of a disc or reading disc information, when the power is turned ON or a new disc is selected for playback. "READY" is displayed.
- If the multi-CD player cannot operate properly, an error message such as "ERROR 14" is displayed. Refer to the multi-CD player owner's manual.

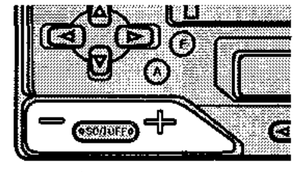
2. **Select the desired disc.**



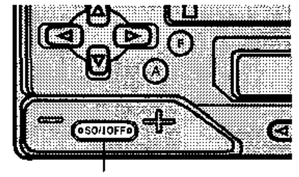
3. **Reverse or advance track by track.**

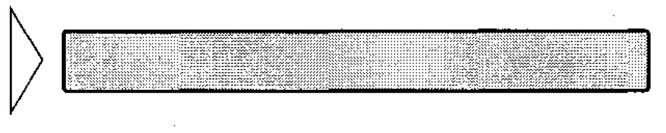


4. **Raise or lower the volume.**



5. **Turn the source OFF. (See page 51.)**



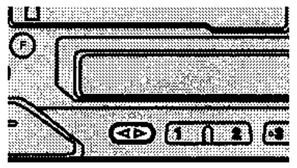


Hold for 1 second

Switching the Multi-CD Player

It is possible to connect up to three multi-CD players by means of a multiple installation adapter. When two or more multi-CD players are installed, their priorities must be specified. Follow the multi-CD player instructions carefully, and set the address switches properly.

- **Select the multi-CD player you want to use.**



M1 → M2 → M3

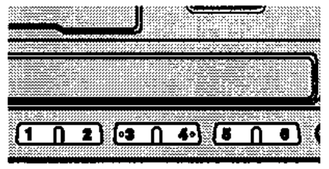
Disc Number Search

■ Disc Number Search (for 6-Disc, 12-Disc types)

You can select discs directly with the 1 to 6 buttons. Just press the number corresponding to the disc you want to listen to.

Note:
- When a 12-Disc Multi-CD Player is connected and you want to select disc 7 to 12, press the 1 to 6 buttons for 2 seconds or longer.

- **Select the desired disc. (eg. Press button 3.)**



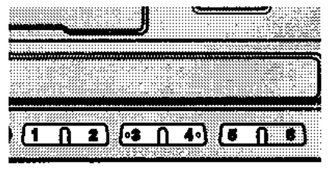
■ Disc Number Rough Search (for 50-Disc type only)

This handy function lets you select discs loaded in a 50-Disc Multi-CD Player using the 1 to 5 buttons. The 50 discs are divided into five blocks, with each of the 1 to 5 buttons assigned to a block.
For example, if you press button 1, discs 10 through 19 are searched in order, and then the disc with the lowest disc number is selected.

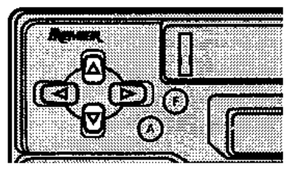
Note:
- Pressing button 5 lets you select the 50th disc only.
- Button 6 does not operate.
- Rough search of discs 1 to 9 is not possible. Use the ▲/▼ buttons to select a desired disc.

Using Multi-CD Players

1. **Press the appropriate button from 1 to 5 to select the block containing the desired disc. (eg. Press button 4.)**



2. **Select the desired disc.**



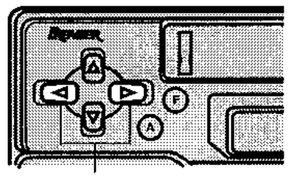
Track Search and Fast-forward/Reverse

Besides Track Search convenience when searching for a desired track, this unit also lets you fast-forward and reverse through tracks to find a desired phrase or section of music.

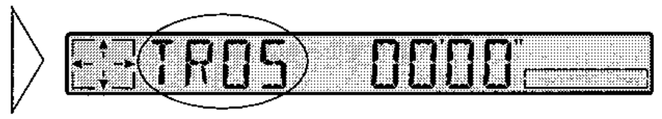
■ Track Search

This feature enables you to advance or reverse track by track.

- **Reverse or advance track by track.**



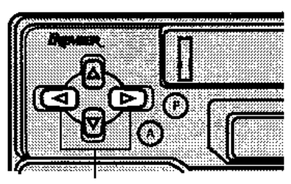
Hold for half a second or less



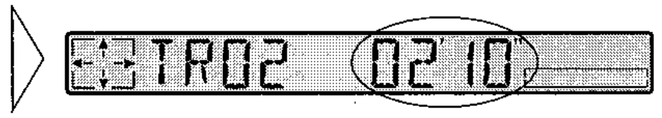
■ Fast-forward/Reverse

This feature enables you to advance or reverse at high speed between tracks.

- **Reverse or fast-forward through tracks.**



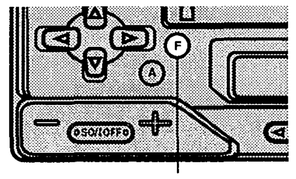
Continue pressing



Entering the Function Menu

In this menu you can select Multi-CD Player functions.

- **Select the desired mode in Function Menu.**



Each press
changes the Mode ...

Each press of the Function button selects the mode in the following order:
REPEAT → LIST → RANDOM → ITS P → PAUSE

Note:

- You can cancel the Function Menu by pressing the BAND button.
- After selecting the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Specifications

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 8.5 A
Dimensions
(DIN) (chassis) .... 178 (W) × 50 (H) × 150 (D) mm
[7 (W) × 2 (H) × 5-7/8 (D) in.]
(nose) ..... 188 (W) × 58 (H) × 19 (D) mm
[7-3/8 (W) × 2-1/4 (H) × 3/4 (D) in.]
(D) (chassis) .... 178 (W) × 50 (H) × 155 (D) mm
[7 (W) × 2 (H) × 6-1/8 (D) in.]
(nose) ..... 170 (W) × 48 (H) × 14 (D) mm
[6-3/4 (W) × 1-7/8 (H) × 1/2 (D) in.]
Weight ..... 1.2 kg (2.6 lbs)

Amplifier

Continnous power output is 17 W per channel min. into 4 ohms. both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output ..... 35 W × 4
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout output level/output impedance ..... 500 mV/1 kΩ
Tone controls
(Bass) (UC Model)..... ±12 dB (100 Hz)
(ES Model) .....+8 – -16 dB (100 Hz)
(Treble) ..... ±12 dB (10 kHz)
Loudness contour ..... +10 dB (100 Hz), +7 dB (10 kHz)
(volume: –30 dB)

Cassette player

Tape ..... Compact cassette tape (C-30 – C-90)
Tape speed .... 4.76 cm/sec. (+0.14 cm/sec. -0.05 cm/sec.)
Fast forward/rewinding time .. Approx. 100 sec. for C-60
Wow & flutter ..... 0.09% (WRMS)
Frequency response ..... Metal: 30 – 19,000 Hz (±3 dB)
Stereo separation ..... 45 dB
Signal-to-noise ratio
..... Metal: Dolby B NR IN: 67 dB (IHF-A network)
Dolby NR OUT: 61 dB (IHF-A network)

FM tuner

Frequency range (UC Model) ..... 87.9 – 107.9 MHz
(ES Model) .....87.5 – 108 MHz
Usable sensitivity
..... 11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IHF-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)
Selectivity (UC Model) ..... 70 dB (2ACA)
Three-signal intermodulation
(desire signal level) (UC Model) ..... 50 dBf
(two undesire signal level: 110 dBf)

AM tuner

Frequency range ..... 530 – 1,710 kHz
(ES Model).....531 – 1602 kHz(9kHz)
Usable sensitivity ..... 18 µV (25 dB) (S/N: 20 dB)
Selectivity ..... 50 dB

Note:

- Specifications and the design are subject to possible modification without notice due to improvements.